



(USAF) T.O. 33A1-3-3-2

(NAVY) AN 16-30ARM1-2

**HANDBOOK
MAINTENANCE INSTRUCTIONS**

RADIO TEST SET AN/ARM-1

REVISION
NOTICE

**LATEST REVISED PAGES SUPERSEDE
THE SAME PAGES OF PREVIOUS DATE**

Insert revised pages into basic
publication. Destroy superseded pages.

**PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE
AND THE CHIEF OF THE BUREAU OF AERONAUTICS**



Reproduction for non-military use of the information or illustrations contained in this publication is not permitted without specific approval of the issuing service (BuAer or USAF). The policy for use of Classified Publications is established for the Air Force in AFR 205-1 and for the Navy in Navy Regulations, Article -1509.

LIST OF REVISED PAGES ISSUED

INSERT LATEST REVISED PAGES. DESTROY SUPERSEDED PAGES

NOTE: The portion of the text affected by the current revision is indicated by a vertical line in the outer margins of the page.

<i>Page No.</i>	<i>Date of Latest Revision</i>
* ii.....	1 March 1958
iii.....	15 August 1945
1-0.....	15 August 1945
1-2.....	15 August 1945
1-3.....	15 August 1945
1-7.....	15 August 1945
2-0.....	27 August 1948
2-1.....	15 August 1945
2-2.....	15 August 1945
2-3.....	15 August 1945
2-4.....	15 August 1945
2-5.....	15 August 1945
2-6.....	15 August 1945
2-7.....	15 August 1945
2-8.....	15 August 1945
2-9.....	15 August 1945
2-11.....	15 August 1945
2-13.....	15 August 1945
2-14 - 3-0.....	15 August 1945
4-1.....	27 August 1948
4-2.....	15 August 1945
* 4-4.....	1 March 1958
* 4-5 - 5-1.....	1 March 1958
6-3.....	15 August 1945
6-4.....	15 August 1945
6-5.....	15 August 1945
6-7.....	15 August 1945
6-11.....	15 August 1945
6-12.....	15 August 1945
7-7 - 7-8.....	15 August 1945
7-9 - 7-10.....	15 August 1945

* The asterisk indicates pages revised, added or deleted by the current revision.

ADDITIONAL COPIES OF THIS PUBLICATION MAY BE OBTAINED AS FOLLOWS:

USAF ACTIVITIES.—In accordance with Technical Order 00-5-2.

NAVY ACTIVITIES.—Submit request to nearest supply point listed below, using form NavAer-140; NASD, Philadelphia, Pa.; NAS, Alameda, Calif.; NAS, Jacksonville, Fla.; NAS, Norfolk, Va.; NAS, San Diego, Calif.; NAS, Seattle, Wash.; ASD, NSC, Guam.

For listing of available material and details of distribution see Naval Aeronautics Publications Index NavAer 00-500.

USAF

Revised 1 March 1958

TABLE OF CONTENTS

<i>Section</i>	<i>Page</i>	<i>Section</i>	<i>Page</i>
Destruction of Abandoned Materiel in the Combat Zone.....	v	b. Interconnecting Cords.....	2-0
Unsatisfactory Report.....	v	c. Interconnection of Radio Test Set AN/ARM-1 with Assemblies of Radio Set AN/ARC-3.....	2-0
I. GENERAL DESCRIPTION.....	1-1 — 1-8	2. Starting and Stopping Radio Test Set AN/ARM-1 and Radio Set AN/ARC-3.....	2-2
1. General.....	1-1	a. To Start the Equipment...	2-2
a. Purpose.....	1-1	b. To Stop the Equipment...	2-2
b. Frequency Range.....	1-1	3. Inspection Check of Radio Trans- mitter T-67/ARC-3.....	2-2
c. Major Assemblies.....	1-1	a. Preliminary.....	2-2
d. Power Requirements.....	1-1	b. Procedure.....	2-2
2. Equipment Supplied.....	1-2	4. Alignment Check of Radio Transmitter T-67/ARC-3....	2-4
3. Equipment Required but Not Supplied.....	1-2	a. General.....	2-4
4. Description of Major Assemblies	1-3	b. Procedure.....	2-4
a. Chest CY-146/ARM-1....	1-3	5. Alignment of Radio Trans- mitter T-67/ARC-3.....	2-6
b. Mounting Base MT-236/ ARC-3.....	1-3	a. General.....	2-6
c. Power Junction Box J-68/ ARC-3.....	1-3	b. Procedure.....	2-6
d. Control Box C-118/ARC-3	1-3	6. Inspection Check of Radio Re- ceiver R-77/ARC-3.....	2-8
e. Mounting FT-240-A.....	1-4	a. Preliminary.....	2-8
f. Test Unit TS-178/ARM-1.	1-4	b. Procedure.....	2-8
g. Adapter PL-272.....	1-4	7. Alignment of Radio Receiver R-77/ARC-3.....	2-9
h. Adapter MX-293/ARM-1.	1-5	a. Preliminary.....	2-9
i. Shorting Plug U-30/ARM-1	1-5	b. I-F Alignment.....	2-10
j. Shunting Unit MX-294/ ARM-1.....	1-5	c. Crystal Oscillator Align- ment.....	2-11
k. Alignment Tool MX-174/ ARM-1.....	1-5	d. Fundamental Amplifier Alignment.....	2-11
l. Tuning Wand MX-173/ ARM-1.....	1-6	e. Harmonic Generator Align- ment.....	2-13
m. Relay Maintenance Tools..	1-6	f. R-F Alignment.....	2-14
n. Crystal Unit CR-1A/AR...	1-7	8. Relay Maintenance.....	2-14
5. Interchangeability of Major Assemblies.....	1-7	a. Tool H-703.....	2-14
II. OPERATION AND ADJUST- MENT.....	2-0 — 2-14	b. Tools H-704, H-705 and H-706.....	2-14
1. Preparation for Use.....	2-0		
a. Unpacking the Equipment.	2-0		

TABLE OF CONTENTS (Continued)

<i>Section</i>	<i>Page</i>	<i>Section</i>	<i>Page</i>
III. THEORY OF OPERATION.....	3-0 — 3-3	4. Fuse Replacement.....	4-3
1. General.....	3-0	5. Replacement of Dynamotor Brushes.....	4-3
2. Detailed Functioning.....	3-0	6. Lubrication.....	4-4
a. Power Junction Box J-68/ARC-3.....	3-0	7. Cleaning Dynamotor Commu- tators.....	4-4
b. Control Box C-118/ARC-3.....	3-1	8. Calibration.....	4-4
c. Test Unit TS-178/ARM-1.....	3-1	a. General.....	4-4
d. Tuning Wand MX-173/ ARM-1.....	3-2	b. Test Equipment Required ..	4-4
e. Shunting Unit MX-294/ ARM-1.....	3-2	c. Calibration Procedures	4-4
f. Shorting Plug U-30/ARM-1.....	3-2	V. SUPPLEMENTARY DATA.....	5-1 — 5-4
g. Adapter PL-272.....	3-3	1. Dynamotor Data.....	5-1
h. Adapter MX-293/ARM-1..	3-3	a. Dynamotor Unit DY-21/ ARC-3.....	5-1
IV MAINTENANCE.....	4-1 — 4-4	b. Dynamotor Unit DY-22/ ARC-3.....	5-1
1. Inspection.....	4-1	2. Fuse Complement.....	5-1
a. 25-Hour Inspection.....	4-1	3. Test Unit Meter.....	5-1
b. 100-Hour Inspection.....	4-1	VI. PARTS CATALOG.....	6-1 — 6-13
2. Trouble Shooting.....	4-1	VII. DRAWINGS.....	7-1 — 7-10
a. General.....	4-1		
b. Trouble Chart.....	4-1		
3. Trouble Shooting at Repair Depot.....	4-2		

★
LIST OF TABLES

<i>Table</i>	<i>Page</i>	<i>Table</i>	<i>Page</i>
4-1. Resistance Measurements for Power Junction Box J-68/ARC-3.....	4-2	4-3. Resistance Measurements for Test Unit TS-178/ARM-1.....	4-3
4-2. Resistance Measurements for Con- trol Box C-118/ARC-3.....	4-2	4-4. 1000-Cycle Inductance Measure- ments.....	4-3

★
LIST OF ILLUSTRATIONS

<i>Figure</i>	<i>Page</i>	<i>Figure</i>	<i>Page</i>
1-1. Radio Test Set AN/ARM-1 — In- terior View with Equipment Identified.....	vi	1-3. Power Junction Box J-68/ARC-3 — On Mounting Base MT-236/ ARC-3.....	1-3
1-2. Chest CY-146/ARM-1.....	1-1	1-4. Control Box C-118/ARC-3.....	1-3

LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Page</i>	<i>Figure</i>	<i>Page</i>
1-5. Control Box C-118/ARC-3—End View	1-4	2-7. Radio Receiver R-77/ARC-3 — Bottom View Showing Points of Adjustment	2-10
1-6. Test Unit TS-178/ARM-1	1-4	2-8. Radio Receiver R-77/ARC-3 — Alignment Diagram	2-12
1-7. Adapter PL-272	1-5	2-9. Radio Receiver R-77/ARC-3 — Variable Capacitors, Showing Pointer, Switches and Cam Assembly	2-13
1-8. Adapter MX-293/ARM-1	1-5	5-1. Power Junction Box J-68/ARC-3 — Top View, Dynamotor Unit DY-22/ARC-3 Removed	5-2
1-9. Shorting Plug U-30/ARM-1	1-5	5-2. Control Box C-118/ARC-3 — With Side Cover Removed	5-3
1-10. Shunting Unit MX-294/ARM-1 ..	1-5	5-3. Test Unit TS-178/ARM-1 — With Case Removed	5-4
1-11. Alignment Tool MX-174/ARM-1	1-6	7-1. Test Unit TS-178/ARM-1 — Schematic Diagram	7-2
1-12. Tuning Wand MX-173/ARM-1 ..	1-6	7-2. Test Unit TS-178/ARM-1 — Wiring Diagram	7-3
1-13. Relay Forming Tools	1-6	7-3. Control Box C-118/ARC-3 — Schematic Diagram	7-4
1-14. Relay Burnishing Tool—Open and Closed	1-7	7-4. Control Box C-118/ARC-3—Wiring Diagram	7-5
1-15. Crystal Unit CR-1A/AR	1-7	7-5. Power Junction Box J-68/ARC-3—Schematic Diagram	7-7 — 7-8
1-16. Cap MX-506/ARM-1	1-7	7-6. Power Junction Box J-68/ARC-3—Wiring Diagram	7-9 — 7-10
2-1. Radio Transmitter T-67/ARC-3 — With Crystal Compartment Door Open	2-1		
2-2. Radio Receiver R-77/ARC-3 — With Crystal Compartment Door Open	2-1		
2-3. Radio Transmitter T-67/ARC-3 — Top View Showing Points of Adjustment	2-3		
2-4. Radio Transmitter T-67/ARC-3 — Bottom View Showing Points of Adjustment	2-5		
2-5. Radio Transmitter T-67/ARC-3 — Alignment Diagram	2-7		
2-6. Radio Receiver R-77/ARC-3 — Top View Showing Points of Adjustment	2-9		

Destruction of Abandoned Materiel in the Combat Zone

In case it should become necessary to prevent the capture of this equipment and when ordered to do so, **DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED, OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.**

Means:—

1. Explosives, when provided.
2. Hammers, axes, sledges, machetes, or whatever heavy object is readily available.
3. Burning by means of incendiaries such as gasoline, oil, paper, or wood.
4. Grenades and shots from available arms.
5. Burying all debris or disposing of it in streams or other bodies of water, where possible and when time permits.

Procedure:—

1. Obliterate all identifying marks. Destroy nameplates and circuit labels.
2. Demolish all panels, castings, switch- and instrument-boards.
3. Destroy all controls, switches, relays, connections, and meters.
4. Rip out all wiring and cut interconnections of electrical equipment. Smash gas, oil, and water-cooling systems in gas-engine generators, etc.
5. Smash every electrical or mechanical part, whether rotating, moving, or fixed.
6. Break up all operating instruments such as keys, phones, microphones, etc.
7. Destroy all classes of carrying cases, straps, containers, etc.
8. Bury or scatter all debris.

DESTROY EVERYTHING!



Unsatisfactory Report

For U. S. Army Air Force Personnel:

In the event of malfunctioning, unsatisfactory design, or unsatisfactory installation of any of the component units of this equipment, or if the material contained in this book is considered inadequate or erroneous, an Unsatisfactory Report, AAF Form No. 54, or a report in similar form, shall be submitted in accordance with the provisions of the Army Air Force Regulation No. 15-54, listing:

1. Station and organization.
2. Nameplate data (type number or complete nomenclature if nameplate is not attached to the equipment).
3. Date and nature of failure.
4. Radio model and serial number.
5. Remedy used or proposed to prevent recurrence.
6. Handbook errors or inadequacies, if applicable.

For U. S. Navy Personnel:

Report of failure of any part of this equipment during its guaranteed life shall be made on Form N. Aer. 4112, "Report of Unsatisfactory or Defective Material," or a report in similar form, and forwarded in accordance with the latest instructions of the Bureau of Aeronautics. In addition to other distribution required, one copy shall be furnished to the inspector of Naval Materiel (location to be specified) and the Bureau of Ships. Such reports of failure shall include:

1. Reporting activity.
2. Nameplate data.
3. Date placed in service.
4. Part which failed.
5. Nature and cause of failure.
6. Replacement needed (yes—no).
7. Remedy used or proposed to prevent recurrence.

For British Personnel:

Form 1022 procedure shall be used when reporting failure of radio equipment.

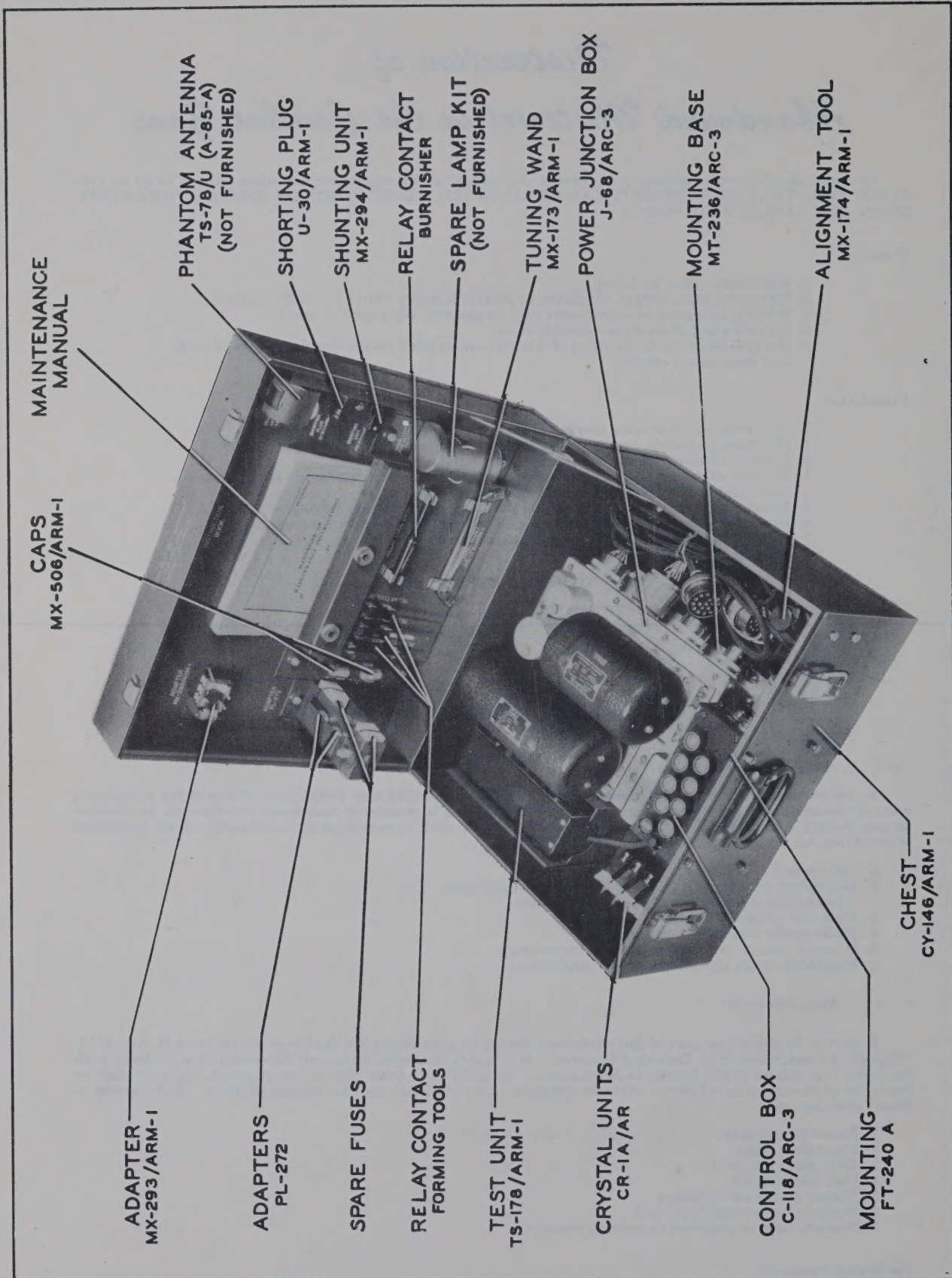


Figure 1-1. Radio Test Set AN/ARM-1 — Interior View with Equipment Identified

SAFETY NOTICE

Operation of this equipment involves the use of high voltages which are dangerous to life. Operating personnel must at all times observe all safety regulations. Do not make adjustments inside the equipment with high voltage supply on.

Do not depend upon door switches or interlocks for protection but always shut down motor generators or other equipment. Under certain conditions dangerous potentials may exist in circuits with power controls in the off-position due to charges retained by capacitors.

To avoid casualties always discharge and ground circuits prior to touching them.

SECTION I

GENERAL DESCRIPTION

1. GENERAL.

a. **PURPOSE.**—Radio Test Set AN/ARM-1 is designed for use in the alignment, testing, and maintenance of Radio Set AN/ARC-3. It is not designed for operation during flight, but it may be transported by air or vehicle to the various points where maintenance work will be performed. (See fig. 1-1.)

b. **FREQUENCY RANGE.**—Six Crystal Unit CR-1A/AR are supplied as a part of this test equipment and their use in Radio Set AN/ARC-3 permits that equipment to be tested throughout the frequency range of 100 to 156 megacycles.

c. MAJOR ASSEMBLIES.

(See figures 1-1 and 1-2.)

Radio Test Set AN/ARM-1, contained in Chest CY-146/ARM-1, consists of the following assemblies: Power Junction Box J-68/ARC-3 with Dynamotor Unit DY-21/ARC-3, Dynamotor Unit DY-22/ARC-3 and Mounting Base MT-236/ARC-3, Control Box C-118/ARC-3 with Mounting FT-240-A, and Test Unit TS-178/ARM-1. Miscellaneous tools, adapters, cords and crystal units are also supplied. (Refer to par. 2, this section.)

d. **POWER REQUIREMENTS.** — The normal operating voltage of this equipment is 28 volts d-c.

This input voltage should be maintained within $\pm \frac{1}{2}$ volt to insure accuracy in the testing of Radio Set AN/ARC-3. When Power Junction Box J-68/ARC-3 is connected to Radio Set AN/ARC-3 and this equipment is turned on, the current drain of the radio test set will be 5.5 amperes when Radio Receiver R-77/ARC-3 is operating and 12 amperes when Radio Transmitter T-67/ARC-3 is in operation. No power is consumed by any other assembly of the test equipment from the input voltage source.

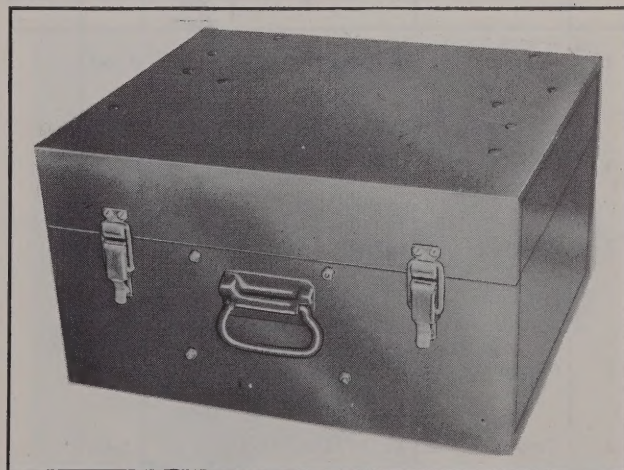


Figure 1-2. Chest CY-146/ARM-1

2. EQUIPMENT SUPPLIED.

The following equipment is supplied as part of Radio Test Set AN/ARM-1.

Quantity per Equipment	Name of Unit	Army Type Designation	Overall Dimensions (Inches)	Wgt. (Lbs.)	Numerical Series of Ref. Symbols
1	Power Junction Box, without mounting plugs or dynamotors	J-68/ARC-3	10 $\frac{11}{32}$ lg x 8 $\frac{3}{8}$ wd x 5 $\frac{3}{16}$ h	6.7	401-499
1	Dynamotor Unit	DY-21/ARC-3	7 $\frac{1}{2}$ lg x 3 $\frac{1}{16}$ wd x 4 h	8.4	
1	Dynamotor Unit	DY-22/ARC-3	6 $\frac{17}{32}$ lg x 3 $\frac{1}{16}$ wd x 4 h	4.8	
1	Mounting Base	MT-236/ARC-3	10 $\frac{13}{16}$ lg x 8 $\frac{7}{8}$ wd x 1 $\frac{1}{16}$ h	0.75	
1	Control Box without mounting or plugs	C-118/ARC-3	5 $\frac{7}{8}$ lg x 2 $\frac{5}{8}$ wd x 6 $\frac{1}{8}$ h	1.75	501-599
1	Mounting	FT-240-A	6 $\frac{3}{8}$ lg x 5 $\frac{1}{2}$ wd x $\frac{5}{16}$ thk	0.21	
1	Chest	CY-146/ARM-1	17 $\frac{1}{2}$ lg x 15 $\frac{1}{4}$ wd x 9 $\frac{1}{16}$ h	26.0	701-799
1	Test Unit	TS-178/ARM-1	4 $\frac{1}{8}$ lg x 3 $\frac{3}{8}$ wd x 7 $\frac{1}{16}$ h	2.8	
2	Adapter	PL-272	1 $\frac{7}{8}$ lg x .992 diam	0.115	
1	Adapter	MX-293/ARM-1	5 $\frac{1}{16}$ lg x 1 $\frac{3}{16}$ wd x 2 $\frac{1}{64}$ thk	0.083	
1	Shorting Plug	U-30/ARM-1	1 $\frac{1}{4}$ lg x 1 $\frac{5}{16}$ diam	0.035	
1	Shunting Unit	MX-294/ARM-1	1 $\frac{1}{16}$ wd x 1 $\frac{3}{8}$ h x .180 thk	0.03	
1	Alignment Tool	MX-174/ARM-1	6 $\frac{11}{16}$ lg x 1 $\frac{1}{16}$ diam	0.122	
1	Tuning Wand	MX-173/ARM-1	6 lg x 1 $\frac{3}{16}$ wd x 1 $\frac{3}{64}$ thk	0.03	

Quantity per Equipment	Name of Unit	Army Type Designation	Overall Dimensions (Inches)	Wgt. (Lbs.)	Numerical Series of Ref. Symbols
1	Set of Relay Maintenance Tools			0.11	
1	Cord	CX-214/ARM-1	12 lg	0.5	
1	Cord	CX-215/ARM-1	60 lg	0.75	
1	Cord	CX-216A/ARM-1	60 lg	0.8	
1	Cord	CX-217/ARM-1	10 lg	0.5	
1	Crystal Unit	CR-1A/AR (5555.555 kc)	1 $\frac{1}{8}$ wd x 1 $\frac{3}{16}$ h x $\frac{1}{16}$ thk	0.07	
1	Crystal Unit	CR-1A/AR (6944.444 kc)	1 $\frac{1}{8}$ wd x 1 $\frac{3}{16}$ h x $\frac{1}{16}$ thk	0.07	
1	Crystal Unit	CR-1A/AR (8000.000 kc)	1 $\frac{1}{8}$ wd x 1 $\frac{3}{16}$ h x $\frac{1}{16}$ thk	0.07	
1	Crystal Unit	CR-1A/AR (8100.000 kc)	1-18 wd x 1 $\frac{3}{16}$ h x $\frac{1}{16}$ thk	0.07	
1	Crystal Unit	CR-1A/AR (8458.823 kc)	1 $\frac{1}{8}$ wd x 1 $\frac{3}{16}$ h x $\frac{1}{16}$ thk	0.07	
1	Crystal Unit	CR-1A/AR (8727.000 kc)	1-18 wd x 1 $\frac{3}{16}$ h x $\frac{1}{16}$ thk	0.07	
2	Spare Fuse Kits				
2	Cap	MX-506/ARM-1	1 $\frac{1}{2}$ across hex flats x 13/16 thk	0.02	

3. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

The following equipment is required but not supplied.

Quantity per Equipment	Name of Unit	Army-Navy Type Designation	Required Characteristics
1	Phantom Transmitter Antenna with kit of spare lamps	TS-78/U (A-85-A)	Approximate load of normal antenna
1	Signal Generator	I-96-A	
1	Output Meter		0-20 Volts

4. DESCRIPTION OF MAJOR ASSEMBLIES.

a. **CHEST CY-146/ARM-1.**—The chest, containing all equipment of the radio test set, is made of steel. A folding-type handle is provided on the front of the chest so that it may be carried conveniently. (See fig. 1-2.)

b. **MOUNTING BASE MT-236/ARC-3.**—This power junction box mounting base is fastened to the bottom of Chest CY-146/ARM-1. (See fig. 1-1.) This mounting, rectangular in shape and made of cadmium-plated steel, has a shock absorber mounted on each of the four corners. A rubber mounting, the peak of which contains a snapslide stud, in the top of each shock absorber is held in place by a rolled edge. A grounding strap is provided at diagonally opposite corners.

c. **POWER JUNCTION BOX J-68/ARC-3.**—Fastened to Mounting Base MT-236/ARC-3 with four snapslides, is the power junction box. (See fig. 1-3.) On the top surface of the metal box are located two dynamotors, two fuse covers, and two filter chokes. Four receptacles are located on the front apron of the power junction box chassis which is sloped inward to prevent moisture from collecting in the plugs under humid conditions. Reading from left to right, the receptacles are marked "PL-148A" which is the "BATTERY" connection, "U-15/U" which is the "TRANSMITTER" connection, "U-16/U" the "CONTROL BOX" connection and "PL-153A" which connects the "RECEIVER."

(1) **DYNAMOTOR UNIT DY-21/ARC-3.**—This dynamotor (see fig. 1-3) is the larger of the

two dynamotors located on top of the chassis. It is held securely to the chassis of the power junction box by four snapslide assemblies on its base. Two extra holes in the dynamotor base slip over guide pins on the chassis and eliminate the possibility of mounting the dynamotor unit in a reversed position. The three-pin socket on the bottom of the dynamotor provides the necessary contact with the plug on the chassis. (See fig. 5-1.)

(2) **DYNAMOTOR UNIT DY-22/ARC-3.**—This dynamotor (see fig. 1-3) is the smaller of the two dynamotors. It has three snapslide fasteners on its base to secure it to the chassis. A three-pin socket on the bottom of this dynamotor furnishes the required contact with the plug on the chassis. (See fig. 5-1.)

(3) **FUSES.**—The "TRANSMITTER" fuse and a spare fuse are located at the left end of the transmitter dynamotor (front view). The "RECEIVER" fuse and a spare fuse are located to the right of the receiver dynamotor (front view). They are concealed by narrow metal covers held in place by snapslide fasteners. (See fig. 5-1.)

(4) **FILTER CHOKES.**—The larger of the two cylindrical metal cans on top of the chassis contains the transmitter dynamotor output filter choke. The smaller can contains the receiver dynamotor output filter choke. (See fig. 5-1.)

d. **CONTROL BOX C-118/ARC-3.**—The components of the control box are housed in a metal box with a black wrinkle finish. The front panel contains eight red push buttons lettered from "A" through "H," a black push button lettered "OFF," and a small unmarked push button. The "OFF"

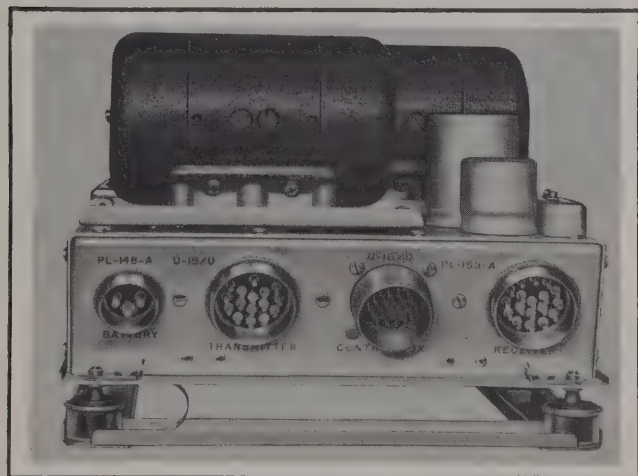


Figure 1-3. Power Junction Box J-68/ARC-3 on Mounting Base MT-236/ARC-3

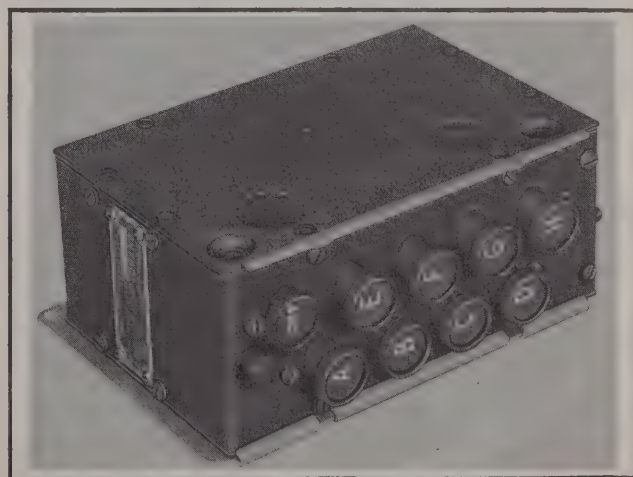


Figure 1-4. Control Box C-118/ARC-3

button cannot be depressed unless the unidentified lock push button is depressed at the same time. (See fig. 1-4.) The identifying letters on each push button are filled with a fluorescent material so that they may be illuminated by means of an ultraviolet light. A receptacle, two jacks, and a push-button switch are located on the end of the control box. (See fig. 1-5.) The jack, marked "TEL" is for the headset connection and the jack marked "MIC" is for the microphone connection. The large receptacle marked "U-16/U" is the power junction box connection. The switch marked "TONE" is not used in aligning Radio Set AN/ARC-3. It is used as a key during "MCW" operation. Mount the control box by slipping its top edge under the rolled edge of Mounting FT-



Figure 1-5. Control Box C-118/ARC-3 — End View

240-A. The extensions of the mounting and control box fit together, and two snapslide assemblies secure the control box to the mounting.

e. MOUNTING FT-240-A.—This mounting consists of a flat sheet of aluminum, one side of which is rolled up. The other side contains two extensions on which one stud is mounted. These studs provide an anchoring for the snapslide assemblies of Control Box C-118/ARC-3.

f. TEST UNIT TS-178/ARM-1. — A compartment in the chest is provided for the test unit. (See figs. 1-1 and 1-6.) This unit is housed in a black wrinkle-finish steel case with a black steel front panel. The front panel is fastened to the case with eight screws. A panel type meter, calibrated from 0 to 100, is located near the top of this panel. Directly below is a selector switch with the points marked "OSC," "1," "2," "3," "4 REC," "4 TRANS," "A+," and "B+." Extending from the top of the case is a cable approximately 54 inches long. This cable terminates in Plug PL-152.

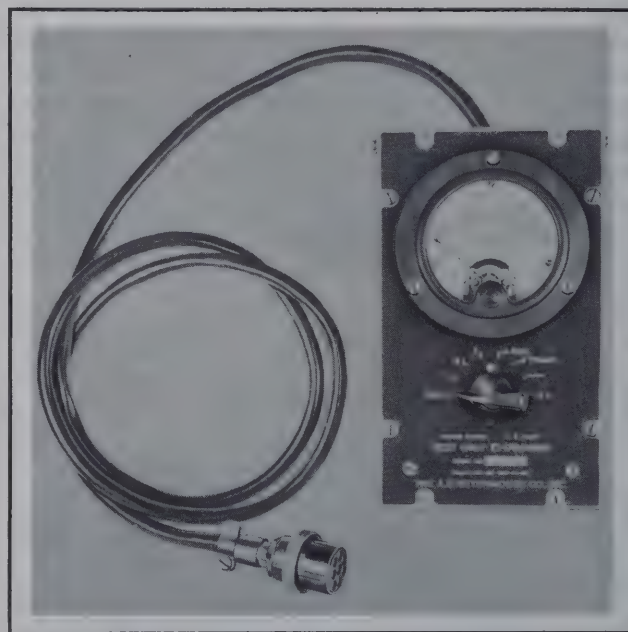


Figure 1-6. Test Unit TS-178/ARM-1

g. ADAPTER PL-272. — This adapter is provided to connect the output of Signal Generator I-96-A to the "ANTENNA" receptacle on the front panel of Radio Receiver R-77/ARC-3. One end of the adapter is machined to fit the "ANTENNA" receptacle of the radio receiver and the other to fit the signal generator output connector.

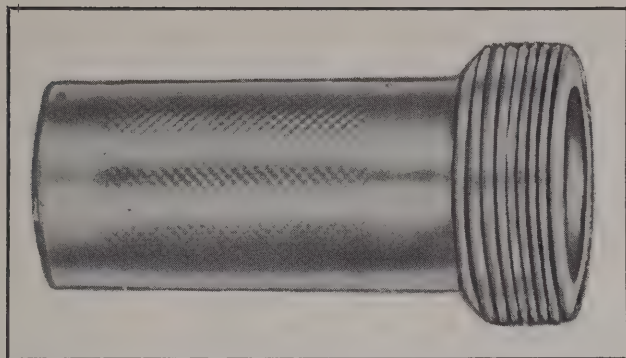


Figure 1-7. Adapter PL-272

h. ADAPTER MX-293/ARM-1.—This adapter consists of contact clips mounted on an insulated base for the purpose of connecting the signal generator output to the grid of the first detector tube. The clips are formed in such a manner so that when the adapter is installed on the four-gang variable capacitor frame of the radio receiver, contact is made with the grid pin of tube JAN-9001 (V-209). (See figs. 1-8 and 2-8.)

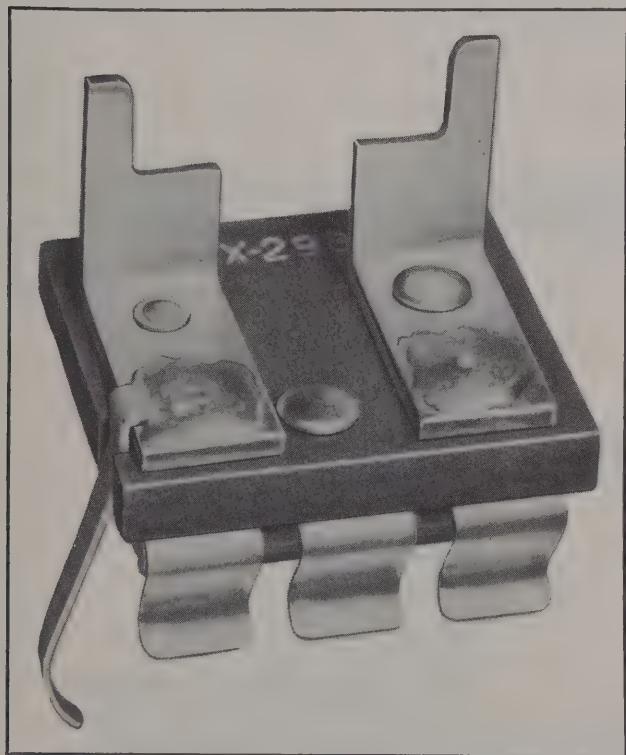


Figure 1-8. Adapter MX-293/ARM-1

i. SHORTING PLUG U-30/ARM-1.—This plug has a five-prong base designed to plug into the socket from which relay K-201 is removed during a

part of the alignment of the receiver. (See fig. 1-9.) Pins No. 2 and No. 4 are connected together to short the contacts of the relay socket which are normally connected to the contacts of the tuning relay when it is plugged in.

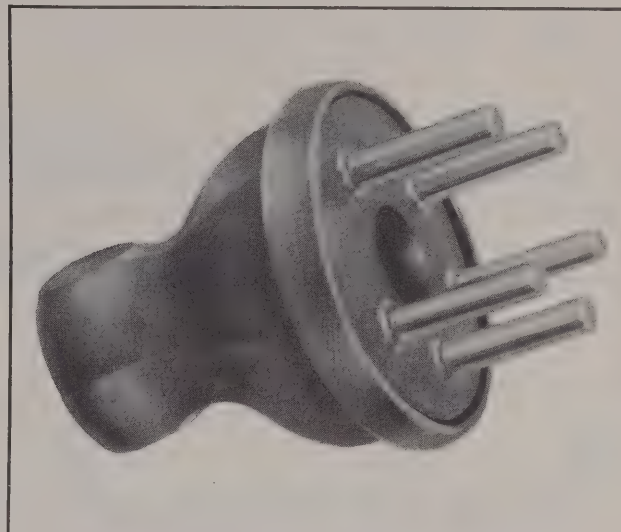


Fig. 1-9. Shorting Plug U-30/ARM-1

j. SHUNTING UNIT MX-294/ARM-1. — The shunting unit consists of a capacitor and a resistor

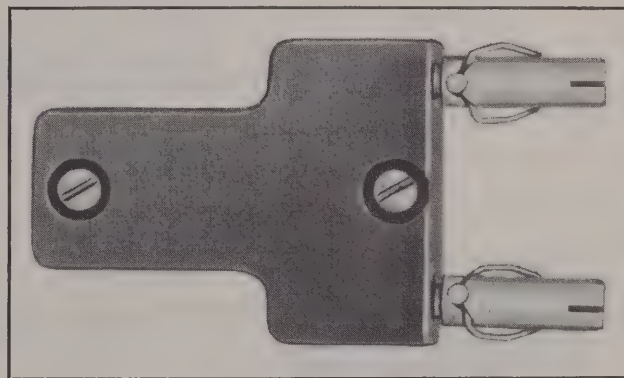


Figure 1-10. Shunting Unit MX-294/ARM-1

housed in a bakelite plug to which is attached two clip connectors for connection to the i-f transformer terminals at certain times during the alignment of the receiver i-f stages.

k. ALIGNMENT TOOL MX-174/ARM-1. — The alignment tool is an insulated screw driver with a yellow plastic handle. It is designed to reduce body capacity to a minimum when aligning Radio Set AN/ARC-3. (See fig. 1-11.)

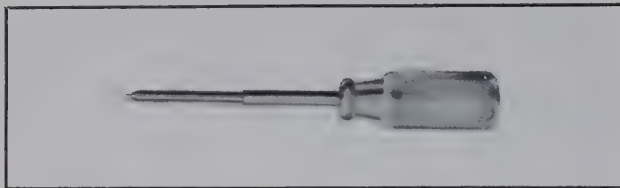


Figure 1-11. Alignment Tool MX-174/ARM-1

1. TUNING WAND MX-173/ARM-1.—The tuning wand is made of clear plastic with a powdered iron slug imbedded in one end and a copper slug in the other. (See fig. 1-12.) It is used to determine the resonant condition of various circuits.

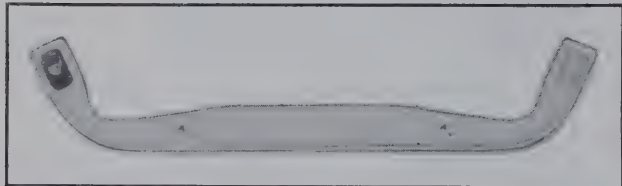


Figure 1-12. Tuning Wand MX-173/ARM-1

m. RELAY MAINTENANCE TOOLS.—Three relay forming tools and a relay burnishing tool are supplied as a part of the radio test set.

(1) The contact forming tool H-704 (part A of fig. 1-13) has a steel shank inserted in a bakelite handle. The end is turned at right angles to the shaft and contains a small slot for forming contacts.

(2) The contact forming tool H-705 (part B of fig. 1-13) has a straight steel shank inserted in a bakelite handle. The end tapers, and contains a small slot for forming contacts.

(3) The contact forming tool H-706 (part C of fig. 1-13) has a 30-degree angle steel shank inserted in a bakelite handle. The end contains a small slot for forming contacts.

(4) The relay contact burnisher is contained in a bakelite case with a pocket clip. Six steel blades and six steel picks are provided relay contact maintenance. One end of the case has an adjustable chuck for holding the burnishing blades and picks. (See fig. 1-14.)

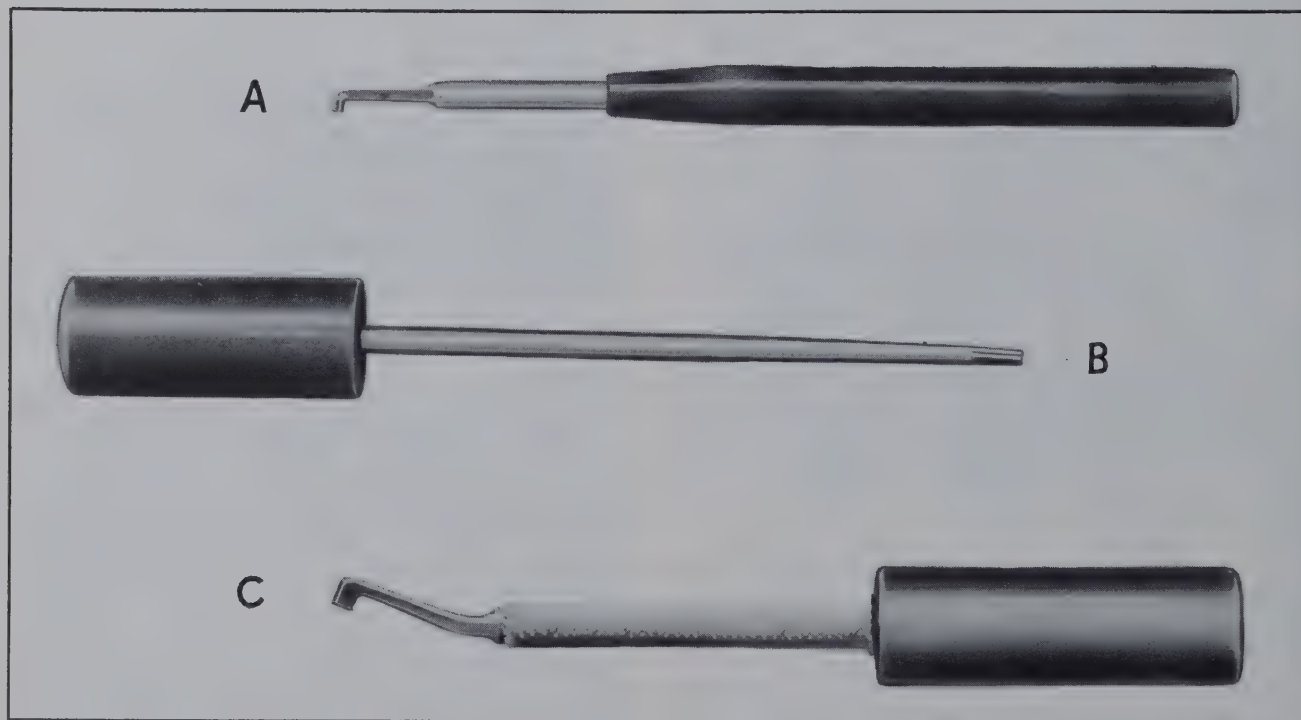


Figure 1-13. Relay Forming Tools

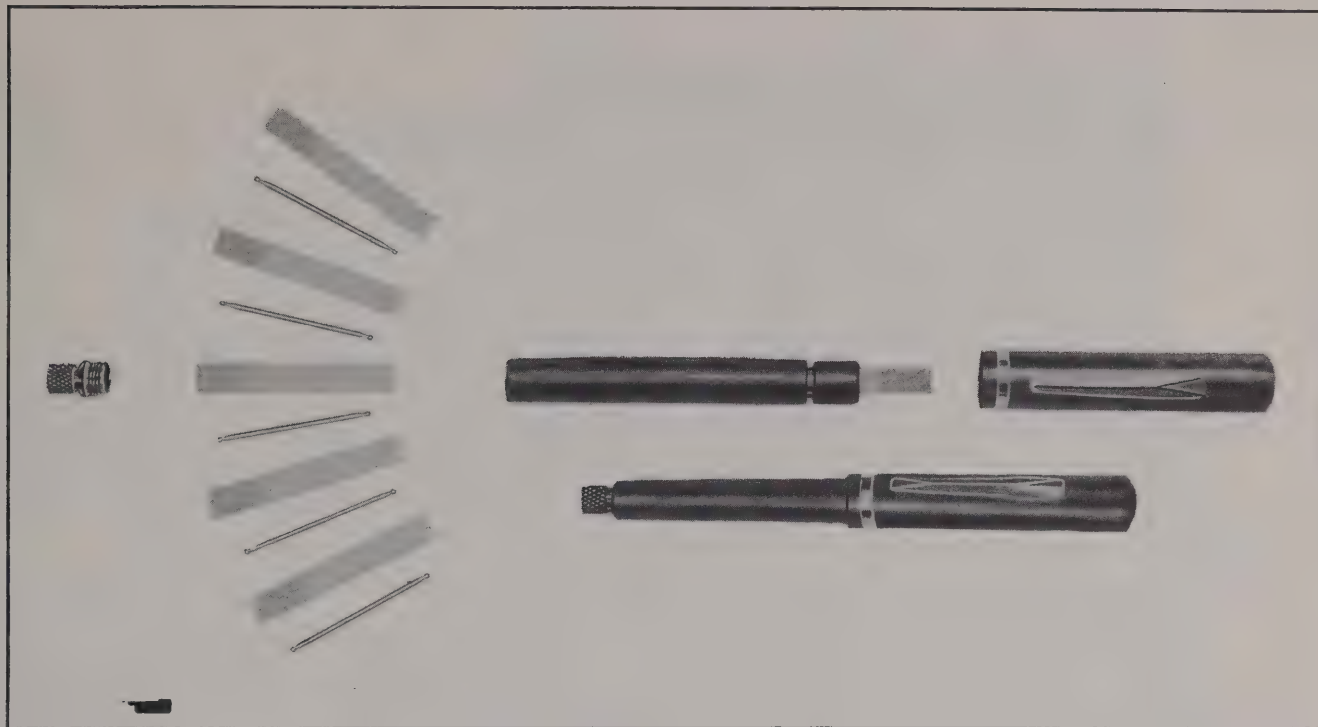


Figure 1-14. Relay Burnishing Tool—Open and Closed

n. CRYSTAL UNIT CR-1A/AR.—These crystal units consist of a thin quartz plate ground to certain very accurate dimensions to control the frequency of the radio transmitter and radio receiver. They are mounted in a bakelite holder provided with plug terminals. (See fig. 1-15.)

o. CAP MX-506/ARM-1.—This is a threaded cap designed to screw onto the motor switch buttons

which are normally held down by the receiver or transmitter top covers. It is used to keep the motor switch closed in order that normal tuning operation may be obtained with the top covers removed.

5. INTERCHANGEABILITY OF MAJOR ASSEMBLIES.

All assemblies of any Radio Test Set AN/ARM-1 are directly interchangeable; however, no assembly of a particular radio test set can be interchanged with another assembly of the same set to provide emergency operation. Power Junction Box J-68/ARC-3 and Control Box C-118/ARC-3 are directly interchangeable with like units of Radio Set AN/ARC-3

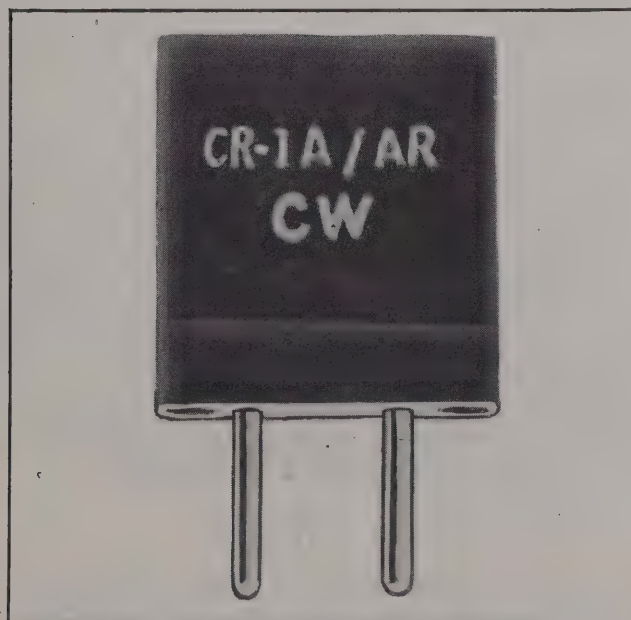


Figure 1-15. Crystal Unit CR-1A/AR

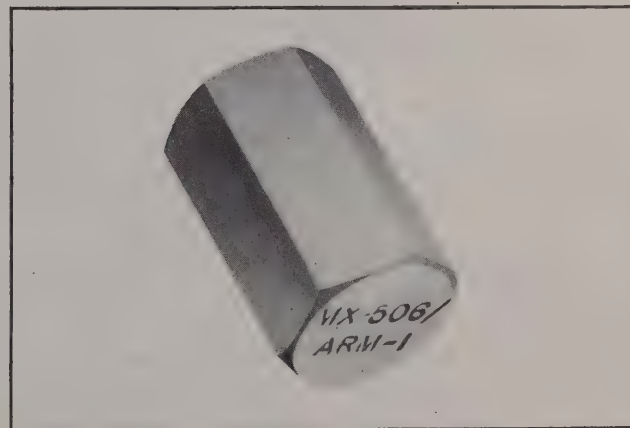


Figure 1-16. Cap MX-506/ARM-1

SECTION II

OPERATION AND ADJUSTMENT

CAUTION

1. WHEN THE SET HAS BEEN TURNED OFF WAIT AT LEAST ONE MINUTE BEFORE TURNING ON AGAIN.
2. DO NOT RELEASE BUTTONS OR PUSH "OFF" BUTTON WHILE SET IS CYCLING.

1. PREPARATION FOR USE.

a. UNPACKING THE EQUIPMENT.—Unpack the equipment and note if any damage has occurred during shipment. Radio Test Set AN/ARM-1 is furnished as a complete unit contained in Chest CY-146/ARM-1, as described in section I. Spring clips have been provided for a Phantom Transmitter Antenna TS-78/U (A-85-A) and a spare lamp kit, which should be installed before the radio test set is sent into the field for use.

b. INTERCONNECTING CORDS.—Ordinarily the equipment is supplied with the cords plugged into the units of the radio test set. If the cords are not inserted, make the connections as outlined below:

(1) Insert one end of Cord CX-217/ARM-1 into the Power Junction Box J-68/ARC-3 receptacle marked "PL-148A."

(2) One end of Cord CX-216A/ARM-1 terminates in a single plug marked "U-15/U," while the other end has a dual termination consisting of a plug marked "U-15/U" and a Plug PL-151A. Insert the end with the single termination into the power junction box receptacle marked "U-15/U."

(3) Insert one end of Cord CX-215/ARM-1 into the power junction box receptacle marked "PL-153A."

(4) Insert one end of Cord CX-214/ARM-1 into the power junction box receptacle marked "U-16/U" and the other end into Control Box C-118/ARC-3 receptacle marked "U-16/U."

c. INTERCONNECTION OF RADIO TEST SET AN/ARM-1 WITH ASSEMBLIES OF RADIO SET AN/ARC-3.—To align Radio Transmitter T-67/ARC-3 and Radio Receiver R-77/ARC-3 of Radio Set AN/ARC-3 interconnect the radio test set in this manner:

(1) Insert one end of Cord CX-215/ARM-1 in the receptacle marked "PL-153A" of Power Junction

Box J-68/ARC-3. Insert the other end into the plug marked "PL-153A" on the front panel of the radio receiver. If Radio Transmitter T-67/ARC-3 only is being aligned, this cord need not be connected.

(2) Insert one end of Cord CX-216/ARM-1 in the power junction box receptacle marked "U-15/U." Insert the two plugs at the other end into the transmitter receptacles marked "U-15/U" and plug PL-151A. The PL-151A receptacle is normally covered with a black bakelite cap. If the radio receiver only is being aligned, this cord need not be connected.

IMPORTANT

Make sure the "OFF" push button on Control Box C-118/ARC-3 is depressed before making the following connections.

(3) Insert one end of Cord CX-217/ARM-1 in the power junction box receptacle marked "PL-148A." Connect the *white* covered wire to the positive terminal of a 28-volt d-c supply. *The white-black tracer is the ground and must connect to the negative terminal* of the 28-volt d-c supply.

(4) Remove Test Unit TS-178/ARM-1. If the radio receiver is to be aligned, insert the test unit plug in the radio receiver receptacle marked "PL-152." This receptacle is located underneath the top cover of the radio receiver. If the radio transmitter is to be aligned, insert the test unit plug in the receptacle marked "PL-152" on the front panel of the radio transmitter. This receptacle is covered with a red bakelite cap. (See fig. 2-1.)

2. STARTING AND STOPPING RADIO TEST SET AN/ARM-1 AND RADIO SET AN/ARC-3.

WARNING

Operation of this equipment involves the use of high voltages which are dangerous to life. Operating personnel must observe all safety precautions.

AN 16-30ARM1-2

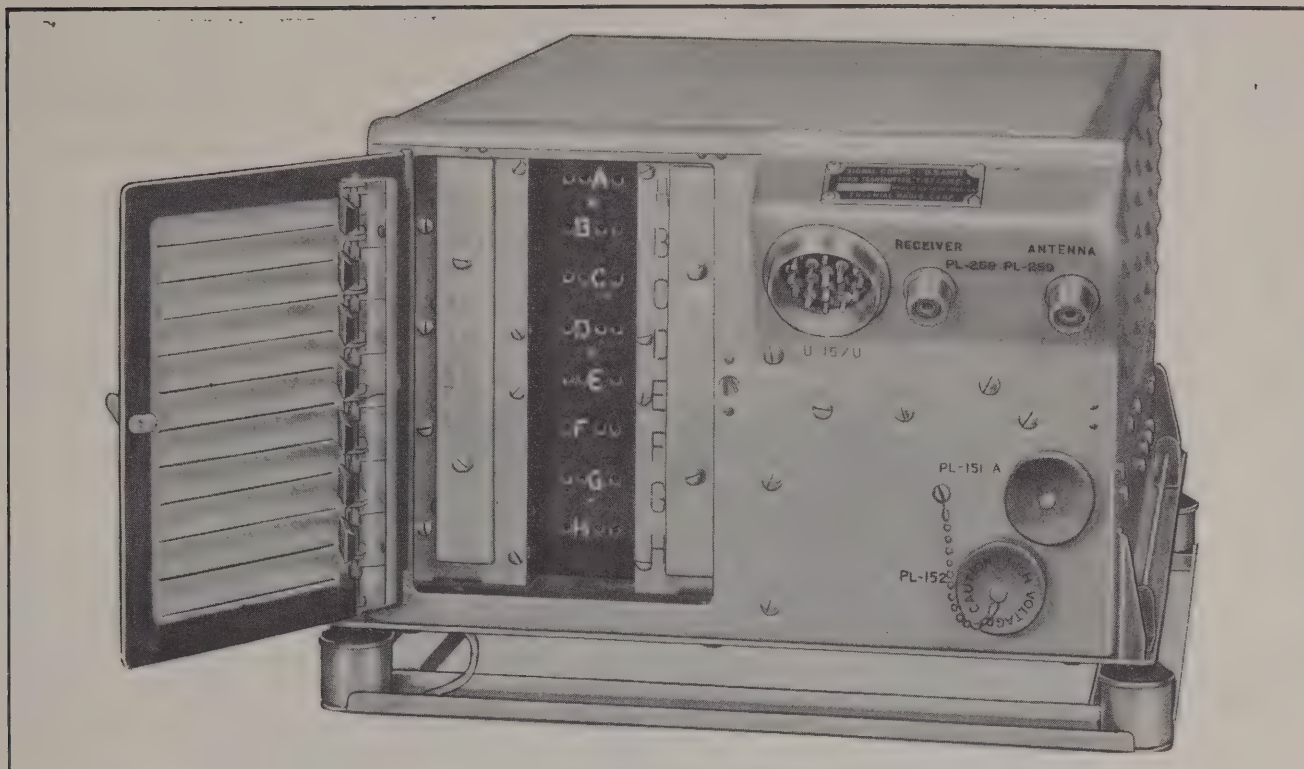


Figure 2-1. Radio Transmitter T-67/ARC-3 — With Crystal Compartment Door Open

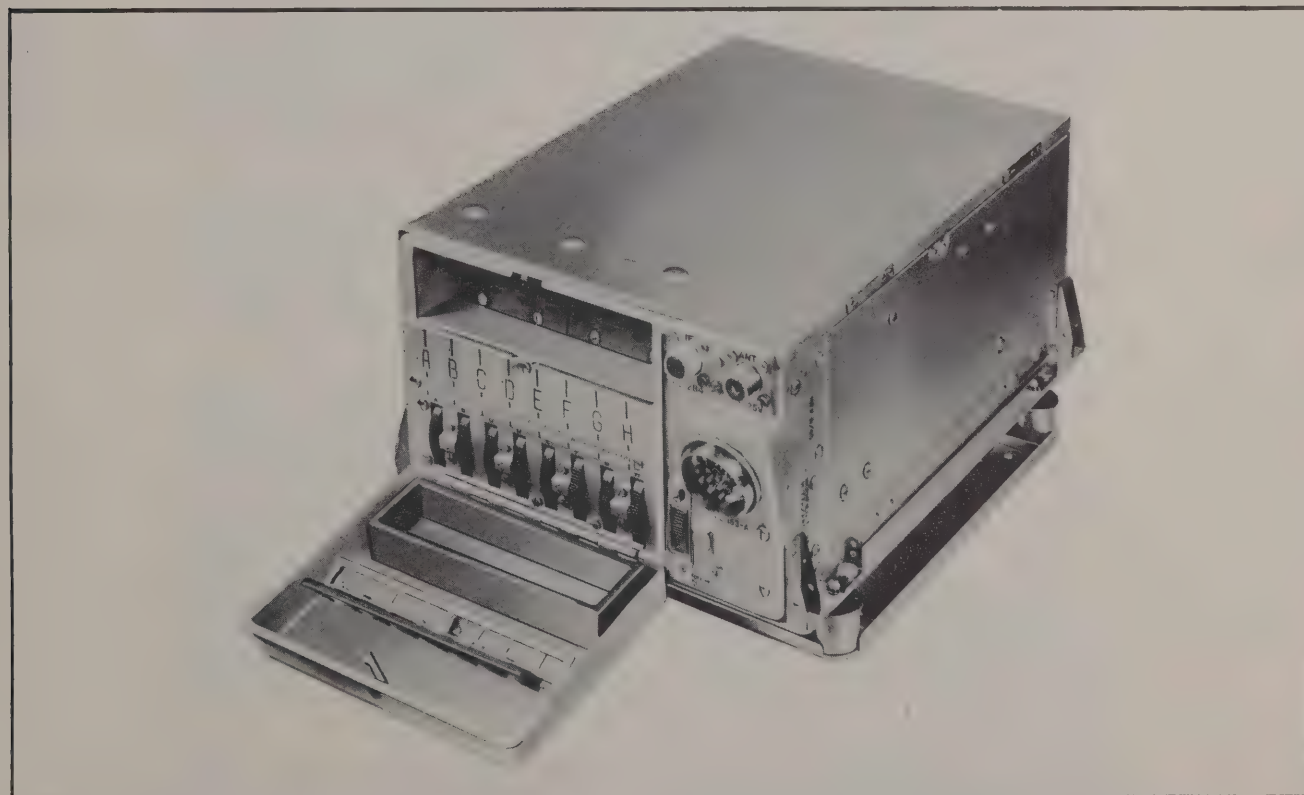


Figure 2-2. Radio Receiver R-77/ARC-3 — With Crystal Compartment Door Open

a. **TO START THE EQUIPMENT.**—Push any one of the eight, red, channel-selector push buttons, marked “A” to “H,” which are located on the front panel of Control Box C-118/ARC-3 of the radio test set. This automatically releases the “OFF” button and applies power to the radio test set and Radio Set AN/ARC-3. A period of 30 seconds should then be allowed for warm-up during which time the tuning motors on Radio Transmitter T-67/ARC-3 and Radio Receiver R-77/ARC-3 will begin to operate. When these tuning motors stop, the equipment is ready for operation.

b. **TO STOP THE EQUIPMENT.**—Push the black “OFF” button and the small unmarked lock button at the same time. Both of these push buttons are located on the top panel of the control box.

3. INSPECTION CHECK OF RADIO TRANSMITTER T-67/ARC-3.

Check the operation of Radio Transmitter T-67/ARC-3 following the procedure outlined below.

a. PRELIMINARY.

(1) Interconnect Radio Test Set AN/ARM-1 and the radio transmitter as outlined in paragraph 1c, this section.

(2) Insert the plug of a microphone, with a push-to-talk switch, in the “MIC” jack on Control Box C-118/ARC-3 of the radio test set.

(3) Insert the plug of Test Unit TS-178/ARM-1 in the receptacle marked “PL-152” on the front panel of the radio transmitter.

(4) Attach Phantom Transmitter Antenna TS-78/U (A-85-A) to the “ANTENNA” receptacle on the front panel of the radio transmitter.

(5) Open the crystal compartment door on the radio transmitter and insert a Crystal Unit CR-1A/AR in sockets “A,” “B” and “C.”

(6) If the top cover of the radio transmitter has been removed, screw the cap MX-506/ARM-1 over the motor control switch S-102, located on a bracket near the tuning motor. (See fig. 2-3.)

b. PROCEDURE.

(1) Depress the channel “A,” “B” or “C” push buttons of Control Box C-118/ARC-3. Allow the equipment to warm up until the motor stops.

(2) Turn the selector switch on Test Unit TS-178/ARM-1 to “A+.” With the switch in this position the meter reads 50 volts full scale. Since the input voltage is 28 volts, the correct meter reading is 56.

(3) Press the microphone push-to-talk button. Turn the selector switch to “B+.” In this position the meter reads 500 volts full scale. Since the “B” voltage is approximately 400 volts, the correct meter reading is 80.

(4) Open the crystal compartment door and remove the crystal from channel “A.” Insert Radio Test Set AN/ARM-1 crystal unit marked 8458.823 kc. Then close the crystal compartment door and push the red channel-selector push button marked “A” on the control box. This operation will tune the equipment to 152 megacycles.

(5) Press the microphone push-to-talk button. Then turn the selector switch on Test Unit TS-178/ARM-1 to position “OSC.” The meter reading should be between “20” and “70.”

(6) Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position “1.” The meter reading should be between “25” and “90.”

(7) Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position “2.” The meter reading should be not less than 25. Slowly insert each end (not simultaneously) of Tuning Wand MX-173/ARM-1 into 2nd harmonic generator grid coil L-105. (See fig. 2-3.) The maximum meter reading should be not more than twice the reading obtained without using the tuning wand.

(8) Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position “3.” The meter reading should be not less than 25. Slowly and separately insert each end of Tuning Wand MX-173/ARM-1 into the 2nd har-

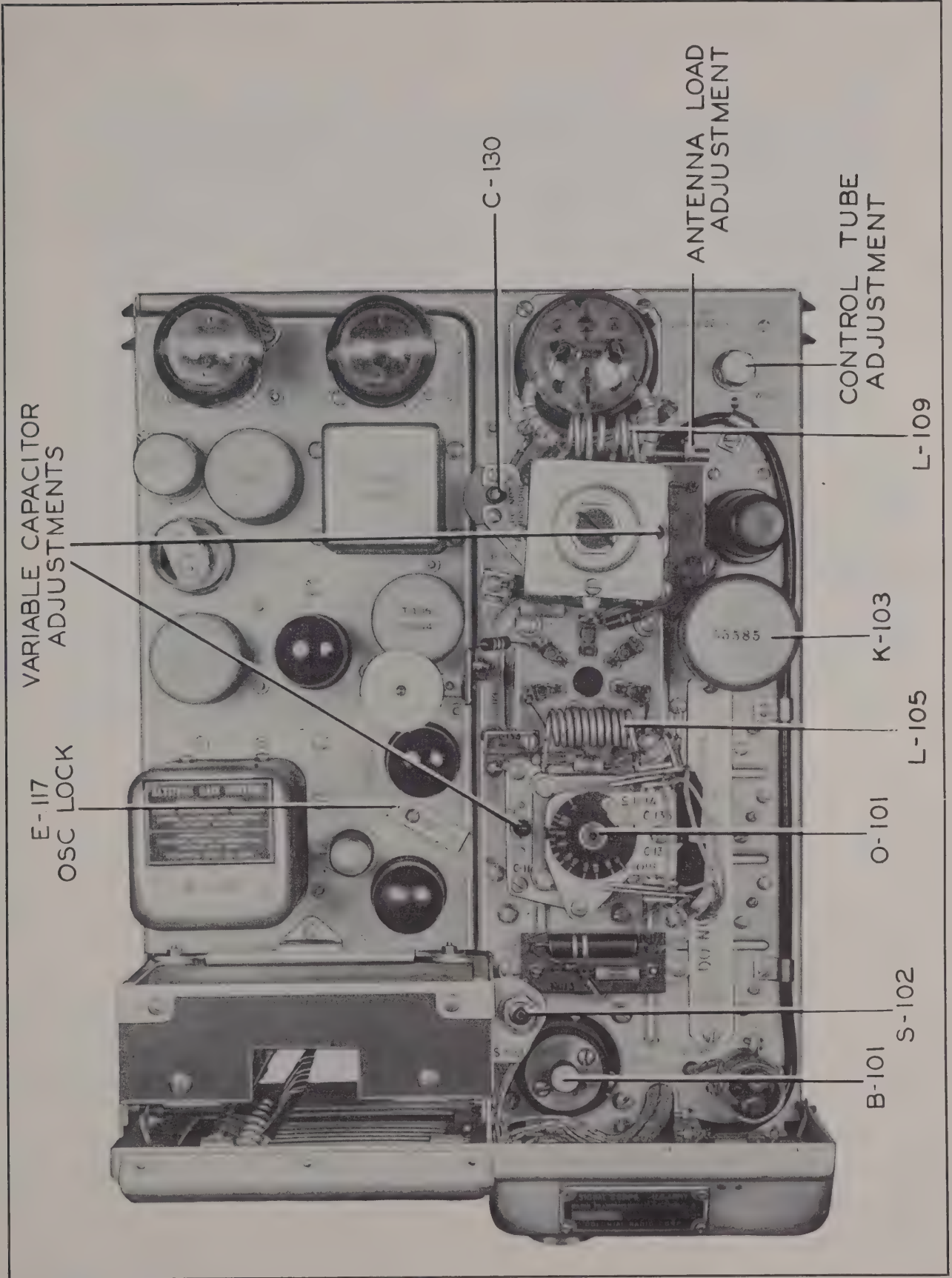


Figure 2-3. Radio Transmitter T-67/ARC-3 — Top View Showing Points of Adjustment

monic generator plate coil L-106. (See fig. 2-4.) The maximum meter reading should be not more than twice the reading obtained without using the wand.

(9) Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position "4 TRANS" and observe the meter reading. Slowly and separately insert each end of Tuning Wand MX-173/ARM-1 into the power amplifier coil L-109. (See fig. 2-3.) The minimum meter reading should be not more than eight below the original reading.

IMPORTANT

A deviation in any of the above readings indicates that the circuit involved requires alignment or repair.

4. ALIGNMENT CHECK OF RADIO TRANSMITTER T-67/ARC-3.

a. GENERAL.—Check the alignment of Radio Transmitter T-67/ARC-3 following the procedure outlined below if erratic operation of the radio transmitter is evident.

b. PROCEDURE.

(1) Interconnect Radio Test Set AN/ARM-1 and the radio transmitter as outlined in paragraph 1c, this section.

(2) Connect other equipment as outlined in paragraph 3a, this section, except that Cap MX-506/ARM-1 should not be installed.

(3) If the crystal unit used for channel "A" in the check of paragraph 3b was removed or replaced with another, it should be exchanged with the radio test set crystal unit marked 8458.823 kc for the test which follows.

(a) Depress channel-selector push button "A" on Control Box C-118/ARC-3 and hold down the motor control switch S-102 until the tuning motor stops. (See fig. 2-3.) If dial 0-101, located on top of the variable capacitor, does not stop at

152 megacycles but goes to "C," refer to the complete alignment instructions given in paragraph 5, this section.

(b) Turn the selector switch of the test unit to position "1." Depress the channel-selector push button "B." Immediately thereafter, depress the channel-selector push button "A." Tune the radio transmitter for the maximum reading on the test unit meter, by turning the knurled knob on top of the tuning motor B-101. (See fig. 2-3.)

(c) Turn the selector switch of the test unit to position "2" and depress the push-to-talk button. Slowly insert each end of Tuning Wand MX-173/ARM-1, one end at a time, into the field of tank coil L-105 mounted on the top front variable capacitor. (See fig. 2-3.) If the meter reading increases by more than 5 divisions, adjust the green screw marked "2" for the maximum obtainable reading, using the insulated alignment screw driver. (See figs. 1-11, 2-3, and 2-5.)

(d) Turn selector switch of the test unit to position "3" and depress the push-to-talk button. Slowly insert each end of the tuning wand, one end at a time, into the field of the tank coil L-106 mounted on the bottom rear variable capacitor. (See fig. 2-4.) If the meter reading increases by more than 3 divisions, adjust the green screw marked "3" for the maximum obtainable reading. (See figs. 2-4 and 2-5.)

(e) Screw Cap MX-506/ARM-1 over the motor control button S-102 so that the button is locked down. Push button "B" and immediately afterward depress push button "A."

(f) Remove Phantom Transmitter Antenna TS-78-U (A-85-A) from the "ANTENNA" receptacle and turn the selector switch on the test unit to position "4 TRANS." Depress the push-to-talk button and slowly insert each end of the tuning wand, one end at a time, into the field of tank coil L-109 mounted on the top rear variable capacitor. (See fig. 2-3.) If the meter reading does not decrease more than four divisions, no further adjustment is necessary.

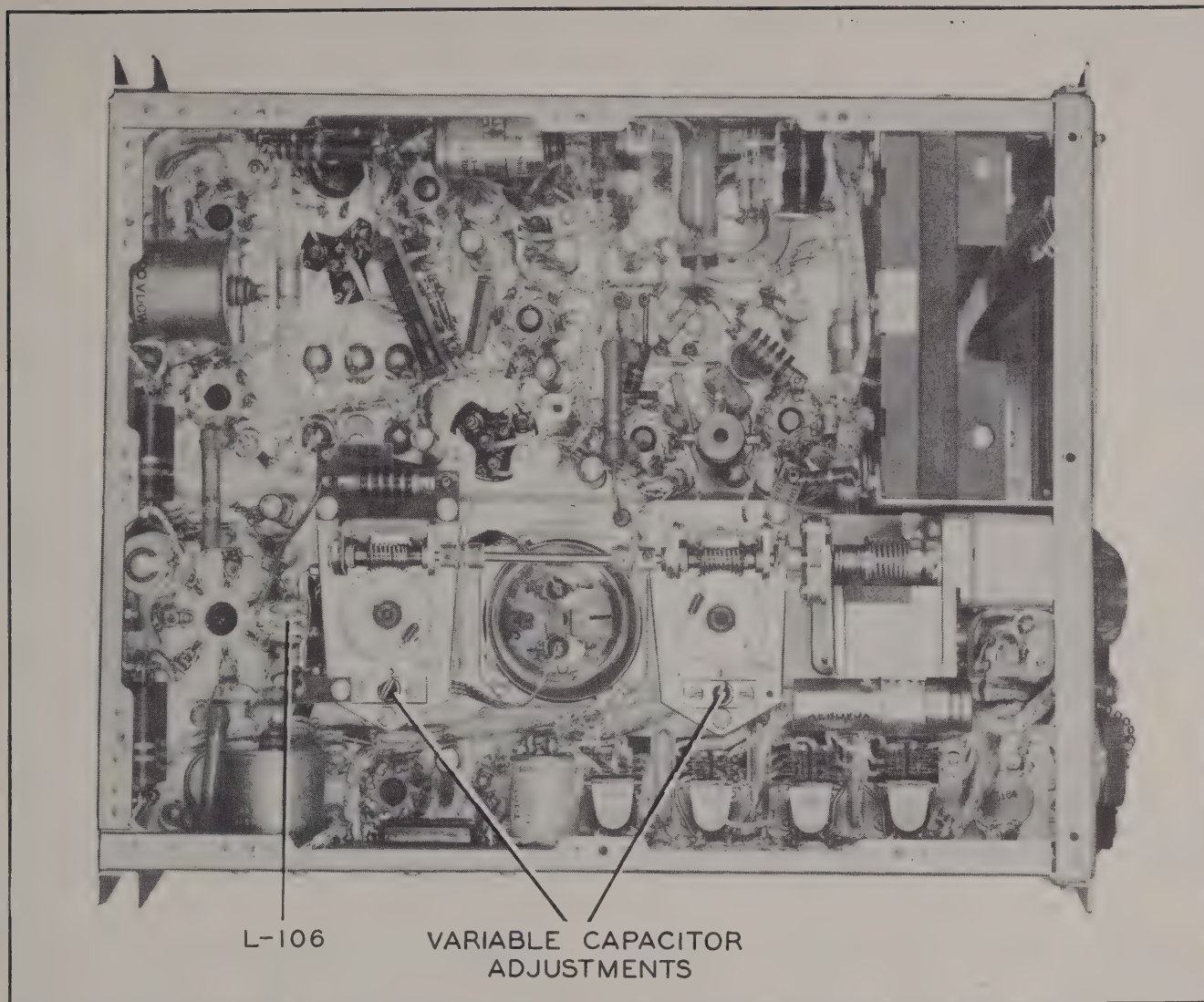


Figure 2-4. Radio Transmitter T-67/ARC-3 — Bottom View Showing Points of Adjustment

CAUTION

Do not disturb either the position of the antenna load adjustment screw (located between power amplifier tube JAN-832A (V-104) and the top rear variable capacitor) or the setting of capacitor C-130 located on the top rear variable capacitor. (See fig. 2-3.)

(g) If the meter reading decreases by more than four divisions, adjust the green screw marked "4T" for the *minimum* meter reading (with screw driver removed) as observed when the tuning wand is used.

(h) Reattach Phantom Transmitter Antenna TS-78/U (A-85-A). Depress the channel-selector push button "B" and immediately depress push button "A." Remove the phantom transmitter antenna again and check the reading on position "4 TRANS" of the test unit while the push-to-talk button of the microphone is depressed. If the reading is more than three divisions higher than that obtained previously in sub-paragraph 3b(8), repeat the procedure outlined in sub-paragraph (g) and (h) preceding.

5. ALIGNMENT OF RADIO TRANSMITTER T-67 ARC-3.

a. GENERAL.—If, as a result of the alignment check outlined in paragraph 4, this section, alignment is necessary, the procedure outlined below should be followed. Alignment should be attempted only by qualified personnel.

b. PROCEDURE.

(1) Interconnect the radio test set and the radio transmitter as outlined in paragraph 1c, this section.

(2) Connect other equipment as outlined in paragraph 3a, this section, except that Cap MX-503/ARM-1 should not be installed.

(3) Open the crystal compartment door and remove all crystals from the set. Then insert the 100-megacycle test equipment crystal, marked "5555.555 kc" in channel "A," the 125-megacycle test equipment crystal, marked "6944.444 kc," in channel "F" and insert the 152 megacycle test equipment crystal, marked "8458.823 kc," in channel "G." Close the crystal compartment door.

(4) Depress the red channel-selector push button marked "G" (152 megacycles) located on the control box of the radio test set. Depress motor control switch S-102 until dial 0-101, located on top of the variable capacitor, approaches the 152 megacycle mark. Then, by turning the knurled knob on top of motor B-101, manually tune to the exact 152 megacycle mark on the dial. (See fig. 2-3.) If the knurled knob does not rotate the dial, depress any other channel push button and immediately re-push the channel "G" button. Tune manually once again. Allow Radio Transmitter T-67 ARC-3 to warm up for five minutes before proceeding with steps (5) through (14).

(5) Turn the selector switch on Test Unit TS-178 ARM-1 to the "OSC" position. The meter should read between 20 and 70.

(6) Turn the selector switch on the test unit to position "1" (1st harmonic grid). Using Alignment Tool MX-174 ARM-1 adjust the green screw, marked "1," located on the variable capacitor underneath the chassis nearest the front, for *maximum* reading on the meter (25 to 90). (See figs. 2-4 and 2-5.)

(7) Turn the selector switch on the test unit to position "2" (2nd harmonic grid). Adjust the green screw marked "2," located on the variable capacitor on top of the chassis nearest the front,

for *maximum* reading on the meter (25 to 90). Care should be taken to adjust the screw so that the meter will read the maximum *with the alignment tool removed*. (See figs. 2-3 and 2-5.)

(8) Turn the selector switch on the test unit to position "3" (power amplifier grid). Adjust the green screw marked "3," located on the variable capacitor underneath the chassis nearest the back, for the *maximum* reading on the meter. (See figs. 2-4 and 2-5.)

(9) Turn the selector switch on the test unit to position "4 TRANS." Adjust the green screw marked "4T," located on the top rear variable capacitor, for the *minimum* reading on the meter. Maximum brilliancy of lamps in Phantom Transmitter Antenna TS-78/U should occur simultaneously. Care should be taken to adjust the screw so that the meter will read the minimum *with the alignment tool removed*. (See figs. 2-3 and 2-5.)

(10) Depress the channel-selector push button "A" (100 megacycles). Hold the motor control switch S-102 down until the 100-megacycle mark on the dial is approached. Then, by turning the knob on top of the motor, manually tune to the exact 100-megacycle mark on the dial. If the motor control knob does not rotate the dial, push any other channel push button and immediately re-push the channel "A" push button. Tune manually once again.

(11) Turn the selector switch on the test unit to position "1." Loosen the screw marked "OSC LOCK" and adjust the oscillator plate coil iron core by turning the core screw until a *maximum* reading on the test meter is obtained.

(12) Repeat the procedure outlined in paragraph 5b(4).

(13) With the test unit selector switch set to position "1," adjust the green screw marked "1" for the *maximum* reading on the meter. (See figs. 2-4 and 2-5.)

(14) Repeat the steps outlined in paragraphs 5b(10) to 5b(13) inclusive, until the maximum adjustment of either the oscillator coil core or the green screw, marked "1," does not affect the *maximum* adjustment of the other.

(15) Repeat the procedure outlined in paragraph 5b(4).

(16) Unscrew cap on the control tube potentiometer R-124 and turn the potentiometer adjusting screw to its extreme counterclockwise position. (See fig. 2-3.)

(17) With the test unit selector switch turned to position "3," slowly tune Radio Transmitter T-67/ARC-3 manually toward the low frequency end of the dial. Set the tuning so that the meter on the test unit reads 10.

(18) Slowly turn the potentiometer adjusting screw clockwise until the tuning control relay K-103 releases, as evidenced by a click, and Transmitter Dynamotor Unit DY-21/ARC-3 stops. (See fig. 2-3.)

(19) To check the adjustment, manually tune back to resonance at 152 megacycles. Then slowly tune the radio transmitter manually toward the low frequency end of the dial. Observe the meter reading at the point where tuning control relay K-103 releases. The meter should read between 8 and 12 at the point of release if the adjustment is correct.

(20) Depress the channel "G" push button and motor control switch S-102 until the motor stops. The radio transmitter should now be set at 152 megacycles, as indicated by the dial calibration.

(21) Turn the selector switch on the test unit to position "4 TRANS." Remove Phantom Transmitter Antenna TS-78/U and adjust the green screw, marked "4T," and located on the top rear variable capacitor, for the *minimum* reading on the meter. Adjust for the *minimum reading when the screw driver is removed*. Replace the phantom transmitter antenna. (See figs. 2-3 and 2-5.)

(22) Depress the channel "A" push button and the motor control switch S-102. Hold the switch down until the motor stops. The radio transmitter should now be set at 100 megacycles, as indicated by the dial calibration.

(23) Turn the selector switch on the test unit to position "4 TRANS." Remove the phantom transmitter antenna and check the tracking by slowly inserting each end of Tuning Wand MX-173/ARM-1, one end at a time, into the field of coil L-109, connected to the variable capacitor on top of the chassis nearest the back. (See fig. 2-3.) If the variation, as indicated by the meter, toward *minimum* is greater than four divisions with the brass end of the tuning wand inserted, further

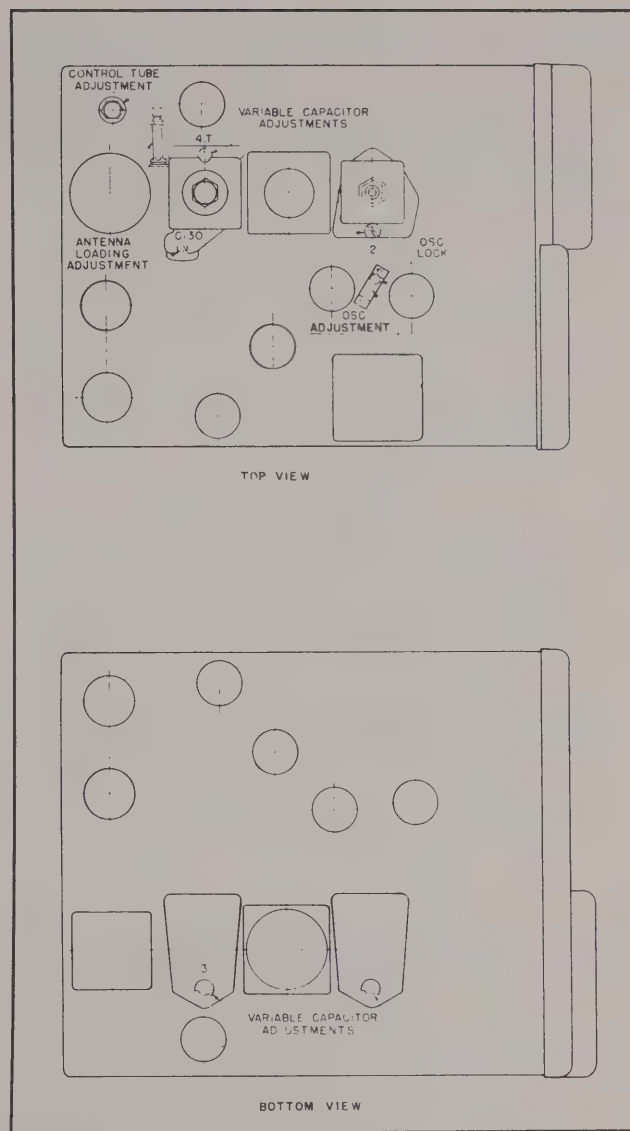


Figure 2-5. Radio Transmitter T-67/ARC-3 — Alignment Diagram

adjustment of the potentiometer is necessary as outlined below.

(a) Replace the phantom transmitter antenna and then press the channel "G" push button. Depress motor control switch S-102 until the motor stops; then turn the control tube potentiometer adjusting screw to its extreme counterclockwise position. Depress any other channel push button and immediately re-press channel "G" push button. Turn the selector switch to position "1," on Test Unit TS-178/ARM-1, and manually tune for the *maximum* reading on the meter. Turn to position "3" on the test unit and manually tune the radio

transmitter toward the low frequency end of dial. Set the tuning so that the meter on the test unit reads 20. Slowly turn the potentiometer adjusting screw clockwise until relay K-103 releases. Repeat the steps outlined in the above paragraphs 5b(20) to 5b(22), inclusive, to check the tracking at 100 megacycles.

(b) If the variation toward *minimum* is still greater than four divisions, as indicated by the meter, with the brass end of the tuning wand inserted, repeat the procedure in step (a) preceding, setting the release point of relay K-103 at 30.

IMPORTANT

The maximum grid drive to the final amplifier, as indicated by the test unit in position "3," must be greater than two times the reading obtained at the setting of the control tube potentiometer. Therefore, if it becomes necessary to adjust the potentiometer to 20 or 30, the maximum grid drive to the final amplifier must be greater than 40 or 60. If it is not, the potentiometer setting must be decreased accordingly.

(24) Depress the channel "F" push button and motor control switch S-102. Hold the switch down until the motor stops. The radio transmitter should now be set up at 125 megacycles as indicated by the dial calibration.

(25) Adjust the trimmer capacitor C-130 for the *maximum* brilliancy on the lamps of the phantom transmitter antenna. (See figs. 2-3 and 2-5.)

(26) Loosen the locking nut on the antenna load adjustment. (See fig. 2-3.)

(27) Turn the selector switch on the test unit to position "4 TRANS" and set the antenna load adjustment for the *maximum* load as indicated by the *maximum* reading on the test unit meter.

(28) Back off the coupling two divisions on the meter, or to a reading of 75, whichever is lower.

(29) Tighten the locking nut on the antenna load adjustment.

(30) The radio transmitter should now be properly aligned.

6. INSPECTION CHECK OF RADIO RECEIVER R-77/ARC-3.

Check the operation of Radio Receiver R-77/ARC-3 following the procedure outlined below.

a. PRELIMINARY.

(1) Interconnect Radio Test Set AN/ARM-1 and the radio receiver as outlined in paragraph 1c, this section.

(2) Open the crystal compartment door and insert a Crystal Unit CR-1A/AR of the radio test set in sockets "A," "B" and "C" if the original crystals used in the receiver were removed previously.

(3) Set the thumbwheel for each of these channels to any harmonic of the crystal for that channel (11th through 18th harmonic).

(4) Screw Cap MX-506/ARM-1 over motor control button S-203 (adjacent to the PL-152 receptacle) so that the button is locked down. (See fig. 2-6.)

b. PROCEDURE.

(1) Push any channel selector button. Turn the selector switch on the test unit to "A+" position. With the switch in this position, the meter reads 50 volts full scale. Since the "A" voltage is 28 volts, the correct meter scale reading is 56. Turn the selector switch to "B+" position. In this position the meter reads 500 volts full scale. Since the "B" voltage is approximately 200 volts, the correct meter reading is 40.

(2) Open the crystal compartment door of the radio receiver and remove all crystals from the crystal compartment. Insert the test equipment crystal, marked "8000.000 kc," in channel "A." Insert the test equipment crystal, marked "8100.000 kc," in channel "B." Insert the test equipment crystal, marked "8727.000 kc," in channel "C." Insert the test equipment crystal, marked "8458.823 kc," in channel "D." Close the crystal compartment door.

(3) Depress the channel-selector push button, marked "C," on Control Box C-118/ARC-3.

(4) Turn the selector switch on Test Unit TS-178/ARM-1 to "OSC." The meter reading should be approximately 50. Depress channel-selector push button, marked "A." The meter scale reading should be between 8 and 14.

(5) Turn the selector switch on the test unit to position "1." Depress channel push buttons "A," "B," "C," and "D" consecutively, allowing the equipment to tune to each of the channels selected. The meter should read not less than 40 on channels "A," "C," and "D," and not less than 70 on channel "B."

(6) Turn the selector switch on the test unit to position "2," then set the frequency selector thumbwheel switch for channel "A," located on the front panel of the radio receiver, to 156 megacycles. Depress channel selector push button "A." The meter should read not less than 5.

(7) Turn the selector switch on the test unit to position "3." The meter should read not less than 50. Set the thumbwheel for channel "A" to 100 megacycles, then depress any other channel push button and immediately depress the channel

"A" push button again. The meter should read not less than 40.

(8) Turn the selector switch on the test unit to position "4 REC." In order to obtain a proper reading in this position, it is necessary to disconnect the screen of the first detector tube JAN-9001 (V-209). Do this by inserting a tube with the screen pin (No. 6) clipped off close to the base. The meter reading should be not less than "30."

IMPORTANT

A deviation in any of the above readings indicates that alignment or repair of that stage or section involved is necessary.

7. ALIGNMENT OF RADIO RECEIVER R-77/ARC-3.

If, as a result of the inspection check of the preceding paragraph, alignment of the radio receiver is necessary, follow the procedure outlined below.

a. PRELIMINARY.

(1) Equipment required in addition to Radio Test Set AN/ARM-1 is a Signal Generator I-96-A

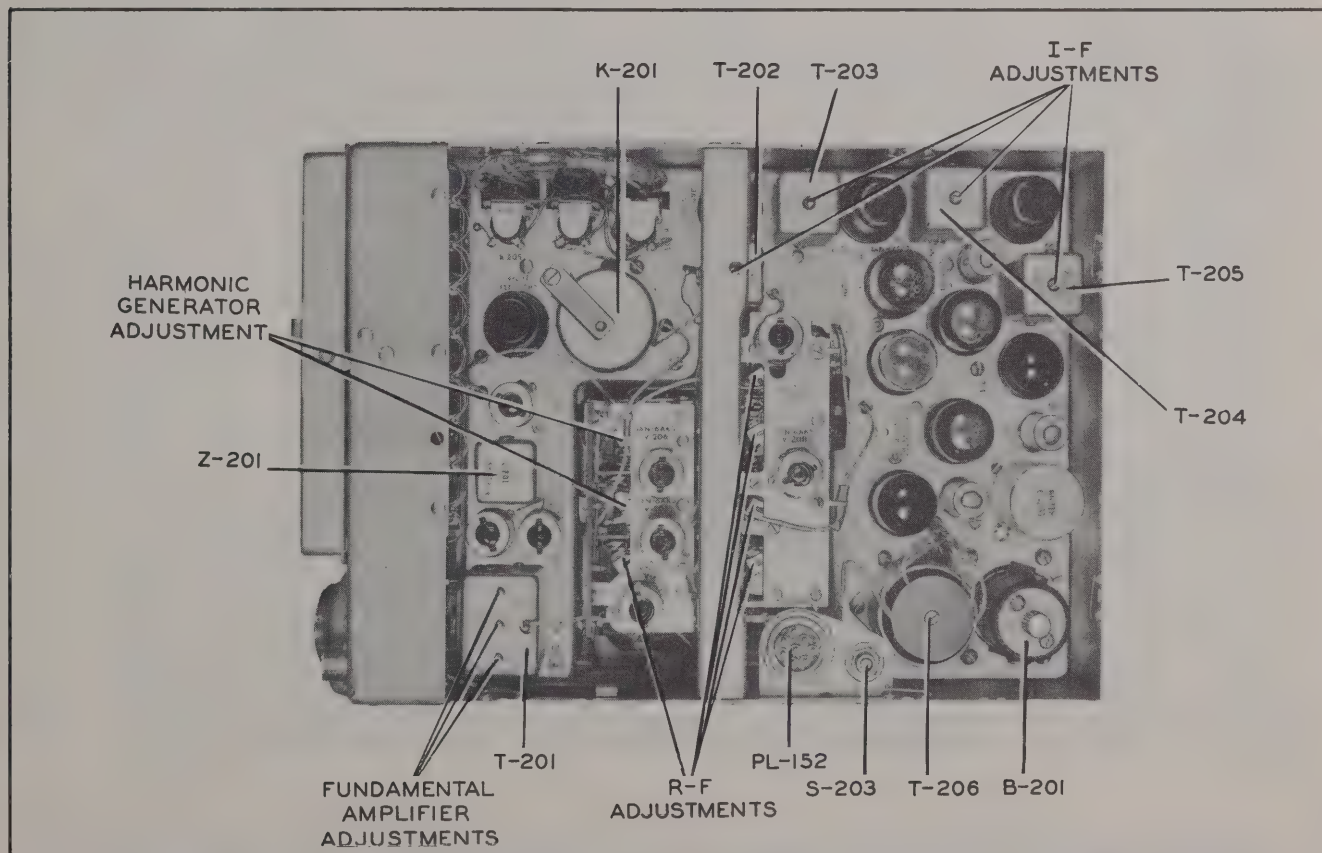


Figure 2-6. Radio Receiver R-77/ARC-3 — Top View Showing Points of Adjustment

or Ferris Type 18-C (with an accurate wavemeter) and an output meter 0 to 20 volts.

(2) Connect the output meter to the "TEL." jack on the control box of Radio Test Set AN/ARM-1 or to the "LO" terminal on the radio receiver output transformer, T-206. (See fig. 2-6.) If the output meter is to be connected to the control box, a suitable plug will also be required.

(3) Clamp Adapter MX-293/ARM-1 to the bracket of the four-gang tuning capacitor so that the projection on the adapter extends through the U-shaped hole adjacent to the first detector tube JAN-9001 (V-209) and contacts the lead to the grid pin on the tube. (See figs. 1-8 and 2-8.)

Note

Make sure the projection on the adapter does not contact any other leads.

(4) Connect the i-f test cord to the socket marked "HIGH" on the signal generator and connect the output terminals to the adapter making sure the polarity is correct.

b. I-F ALIGNMENT.

(1) Turn on and adjust the i-f signal generator to 12 megacycles and press any channel push button on the control box. Allow 45 seconds for the radio receiver to warm up.

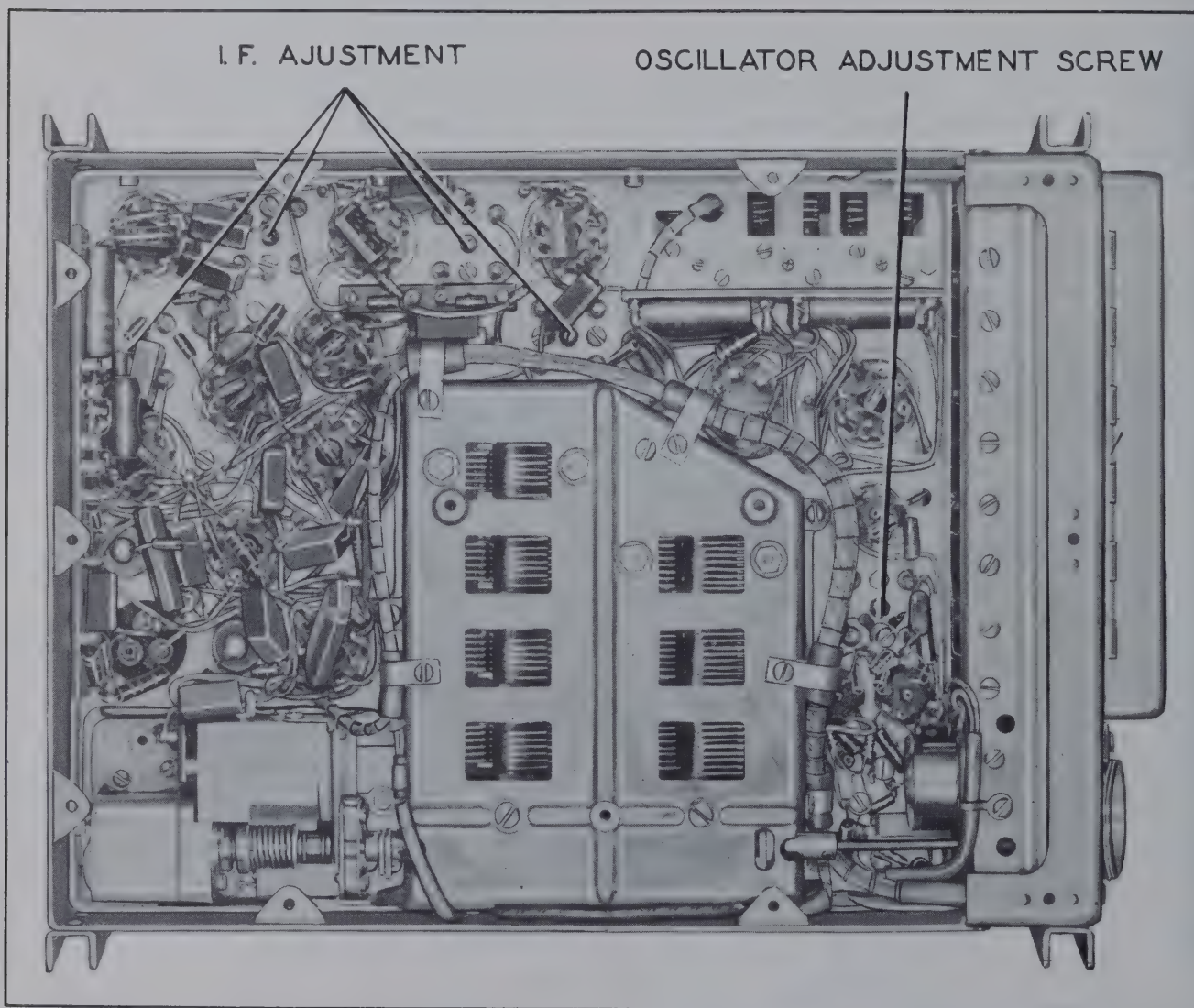


Figure 2-7. Radio Receiver R-77/ARC-3 — Bottom View Showing Points of Adjustment

(2) Adjust the signal generator output to the smallest value which will give a reading on the output meter. If no output is obtainable turn all eight i-f transformer adjusting screws to the maximum counterclockwise position. Then roughly align each stage, feeding the input into the grids of the third, second and first i-f tubes successively (tubes V-212, V-211 and V-210). (See figs. 2-6 and 2-7.)

Note

If a 12-megacycle crystal-controlled signal generator is not available, use Frequency Meter Set SCR-211 to accurately adjust the signal generator frequency to 12 megacycles.

(3) With the 12-megacycle input signal fed to the first detector grid, adjust the screw on top of fourth i-f transformer T-205 for the *maximum* reading on the output meter. (See figs. 2-6 and 2-8.)

(4) Adjust the screw at the bottom of i-f transformer T-205 for the *maximum* reading on the output meter. (See figs. 2-7 and 2-8.) Continue to reduce the input from the signal generator to the smallest value which will give a workable reading on the output meter. Because of the AVC action, alignment cannot be performed with high input.

(5) Connect Shunting Unit MX-294/ARM-1 across terminals 1 and 2 (toward the front of the chassis) on the third i-f transformer T-204. (See fig. 2-8.)

(6) Adjust the screw on top of the transformer for the *maximum* reading on the output meter.

(7) Remove the shunting unit from terminals 1 and 2; then connect it across terminals 3 and 4 (toward the rear of the chassis) on the third i-f transformer T-204. (See fig. 2-8.)

(8) Adjust the screw on the bottom of the transformer for *maximum* reading on the output meter.

(9) Repeat the procedure outlined in subparagraphs 7b (5), (6), (7) and (8); above, for T-203, the second i-f transformer.

(10) Remove the shunting unit from transformer T-203 and connect it across terminals 1 and 2 (toward the inside of the chassis) on the first i-f transformer T-202. (See fig. 2-8.)

(11) Adjust the screw on top of the transformer for the *maximum* reading on the output meter.

(12) Remove the shunting unit from terminals 1 and 2; then connect it across terminals 3 and 4 (toward the outside of the chassis) on the first i-f transformer T-202. (See fig. 2-8.) Adjust the screw on the bottom of the transformer for the *maximum* reading on the output meter

(13) Remove the shunting unit and adapter from the i-f transformer and variable capacitor respectively.

c. CRYSTAL OSCILLATOR ALIGNMENT.

(1) Turn the adjusting screw on the bottom of the oscillator coil Z-201 as far counterclockwise as possible. (See figs. 2-7 and 2-8.)

(2) Open the crystal compartment door of Radio Receiver R-77/ARC-3 and remove all crystals from the crystal compartment. Insert the Crystal Unit CR-1A/AR, marked "8727.000 kc," in channel "A" and depress the channel "A" push button.

(3) Turn the selector switch on Test Unit TS-178/ARM-1 to the "OSC" position. Then, turn the oscillator coil adjusting screw clockwise until the meter on the test unit reads 50. (See fig. 2-8.)

d. FUNDAMENTAL AMPLIFIER ALIGNMENT.

(1) Turn all three adjusting screws, on top of fundamental amplifier transformer T-201, to the maximum counterclockwise position. (See figs. 2-6 and 2-8.)

(2) Remove the crystal unit, marked "8727.000 kc," from channel "A" and insert the crystals marked "8000.000 kc," "8100.000 kc," "8727.000 kc," and "8458.823 kc" in channels "A," "B," "C," and "D" respectively.

(3) Depress channel "B" push button.

(4) Turn the selector switch on the radio test set to position "1."

(5) Turn either of the two outside adjusting screws on top of the fundamental amplifier transformer T-201 two or three turns in a clockwise

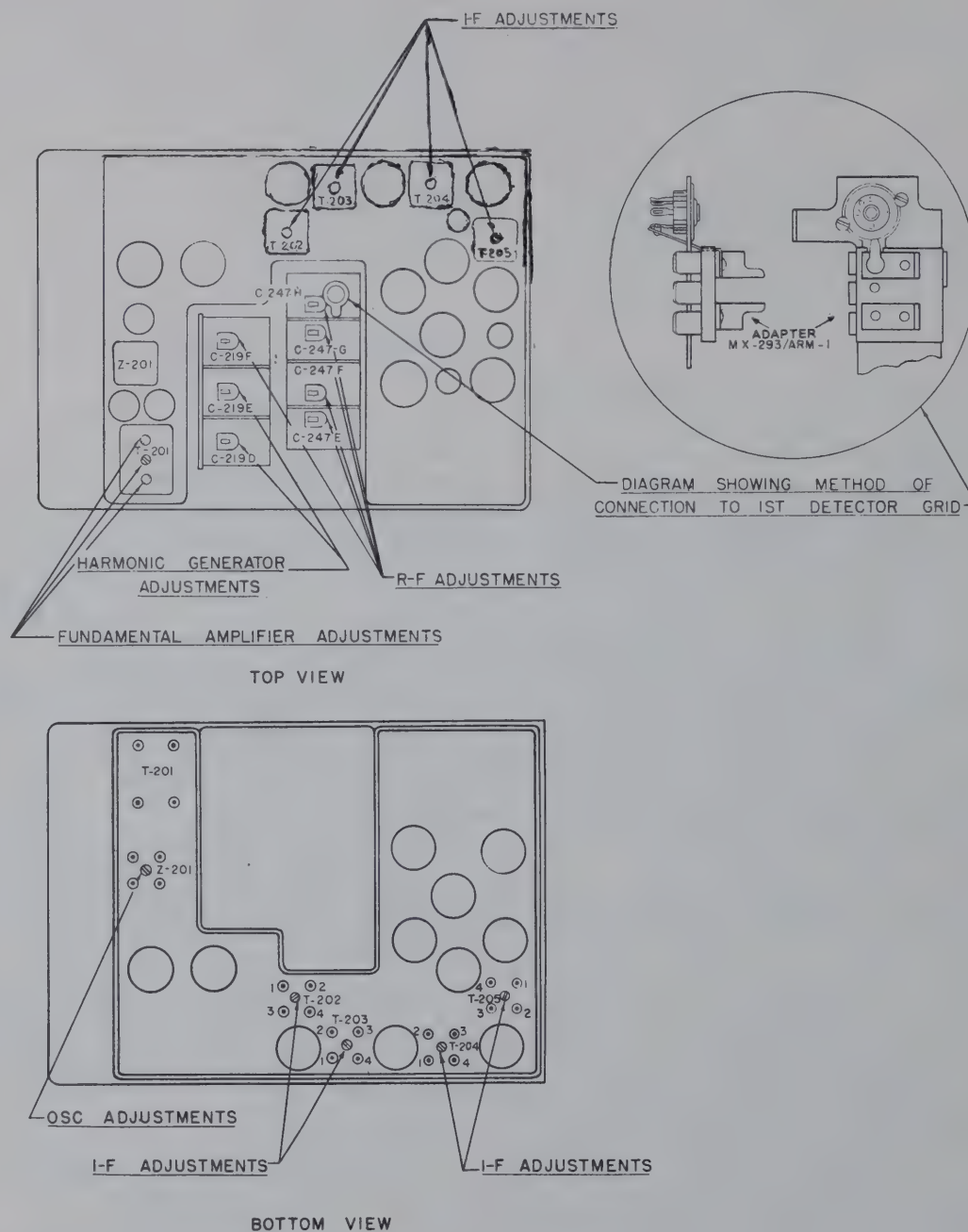


Figure 2-8. Radio Receiver R-77/ARC-3 — Alignment Diagram

direction. Then turn the other outside adjusting screw two or three turns in the same direction. Repeat these operations consecutively until the *maximum* meter reading is obtained. (See fig. 2-6.)

IMPORTANT

The above adjustment is very important. Be sure that a *maximum* reading is obtained on the meter by adjustment of these two screws before proceeding.

(6) Without changing the above adjustment, turn the center adjusting screw on the fundamental amplifier transformer T-201 clockwise until the *maximum* meter reading is obtained. The test unit meter should read between 70 and 90.

(7) Check the test unit meter reading on channels "A," "B," "C" and "D" in succession. The meter should read not less than 40 on any channel. If any reading is less than 40, repeat the fundamental amplifier alignment procedure described in subparagraphs 7d (4), (5) and (6).

e. HARMONIC GENERATOR ALIGNMENT.

(1) Insert Crystal Unit CR-1A/AR marked "8000.000 kc" in channel "A"; then set the channel "A" thumbwheel to position "156."

(2) Depress channel "A" push button on the radio test set control box.

(3) Depress motor control switch S-203 and hold down until motor stops. Observe whether dial indicates "156" or "END."

(4) If the dial is near "156" remove plug-in-relay K-201 and insert Shorting Plug U-30/ARM-1 in the relay socket.

(5) If the dial stops at "END," remove plug-in-relay K-201. Depress channel "B" button and immediately re-push channel A button. Hold down motor control switch S-203 until the motor stops, then insert Shorting Plug U-30/ARM-1 in the relay socket.

(6) Turn knurled knob on motor shaft until the frequency dial on the front panel indicates "156."

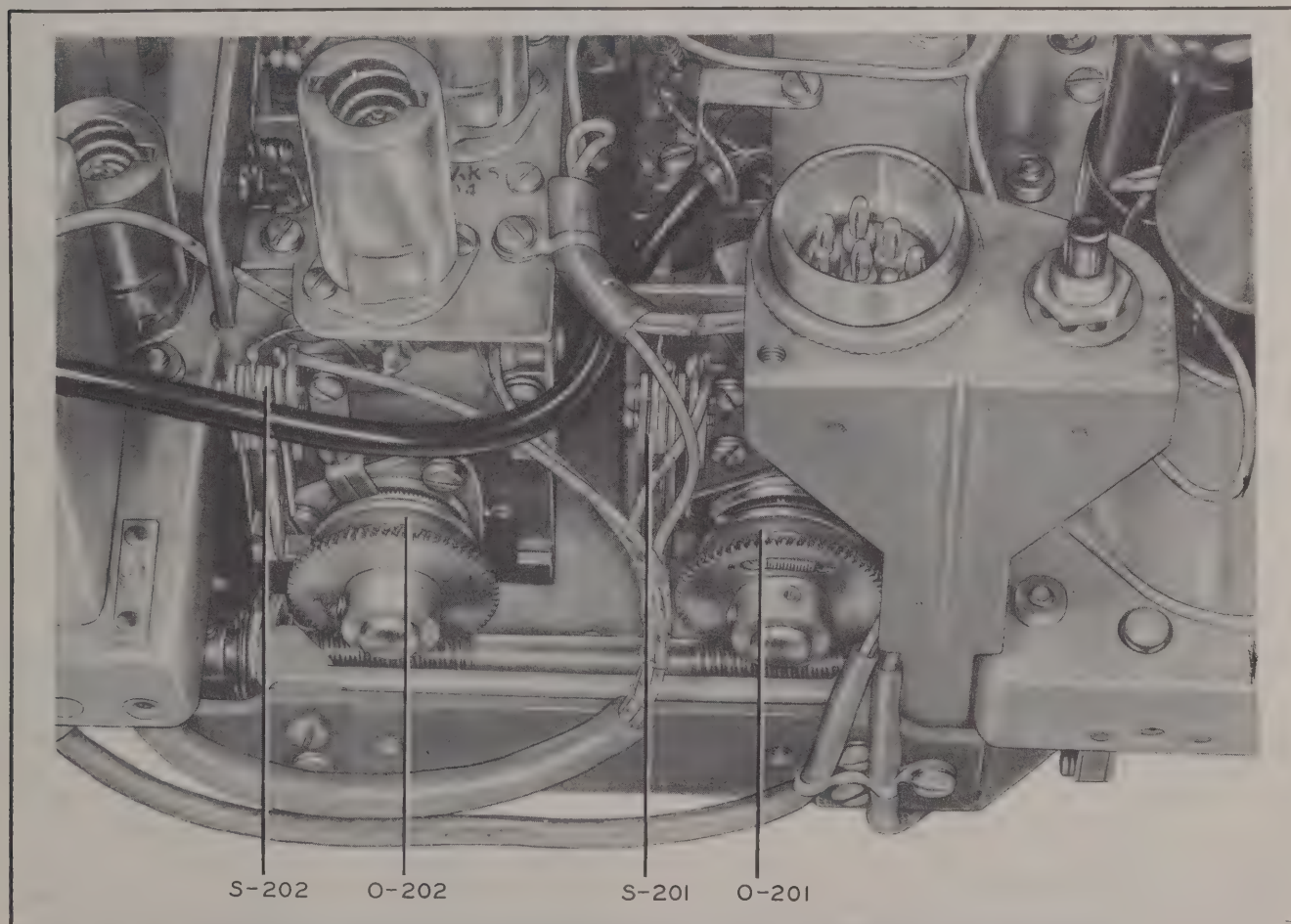


Figure 2-9. Radio Receiver R-77/ARC-3 — Variable Capacitors Showing Pointer, Switches and Cam Assembly

IMPORTANT

If the procedure in (5) was necessary, the frequency dial must be turned in a *counter-clockwise* direction to "156." The pointer at the end of the 3 section variable capacitor should indicate the red portion of the cam as the variable capacitor turns once for three revolutions of the calibrated dial. (See fig. 2-9.)

(7) Turn the selector switch on the test meter to position 3.

(8) Adjust trimmer capacitors C-219D and C-219E for maximum reading on the test meter. Use the alignment tool provided with the radio test set. (See figs. 2-6 and 2-8.)

(9) Remove Shorting Plug U-30/ARM-1 and replace relay K-201.

f. R-F ALIGNMENT.

(1) Insert a Crystal Unit CR-1A/AR marked "8000.000 kc" in channel "A;" then set the channel "A" thumbwheel to position "156."

(2) Connect the output meter to the "TEL." jack of the control box in Radio Test Set AN ARM-1.

(3) Depress the channel "B" push button; then immediately depress channel "A" push button.

(4) Depress motor control switch S-203 until the motor stops. The motor will stop when the frequency dial on the front panel of the radio receiver is just below position "156."

(5) Connect the r-f output of Signal Generator I-96-A or I-130-A to the "ANTENNA" socket on

the front panel of Radio Receiver R-77/ARC-3. Use Adapter PL-272 to make the connection. Tune the signal generator to 156 megacycles for the *maximum* reading on the output meter.

(6) Adjust the trimmer capacitors C-247E, C-247F, C-247G, C-247H and C-219F for the *maximum* reading on the output meter. Repeat these adjustments until no further improvement can be obtained. (See figs. 2-6 and 2-8.)

(7) Set the channel "A" thumbwheel on the front panel of the radio receiver to 100 megacycles. Depress the channel "B" push button and immediately push the channel "A" push button again. Depress the motor control switch S-203 and see that the frequency dial stops at 100 megacycles.

(8) If inaccurate tuning results, repeat each step of the r-f alignment procedure, outlined in this paragraph.

8. RELAY MAINTENANCE.

a. TOOL H-703.—This tool has been provided for the maintenance necessary on contact points. Six flat blades and six small picks with ball points are contained in the screw cap of this tool. By inserting a flat blade in the chuck of the tool, it may be used for lightly burnishing contact points. The small ball points may be used in the chuck to clean carbon from any pits in the relay points. (See fig. 1-14.)

b. TOOLS H-704, H-705 AND H-706.—These three tools have been provided for forming contacts. This type of work should be done only by experienced personnel, as damage to the equipment will result if the contacts are incorrectly formed. Inexperienced personnel should replace the relay in question, rather than attempt to adjust the contacts. (See fig. 1-13.)

SECTION III

THEORY OF OPERATION

1. GENERAL.

Radio Test Set AN/ARM-1 is designed for use in the alignment, testing, and maintenance of Radio Set AN/ARC-3. It is not designed for operation during flight, however it may be transported by air or vehicle to the various points where maintenance work will be performed.

2. DETAILED FUNCTIONING.

a. POWER JUNCTION BOX J-68/ARC-3.—The power junction box provides a high voltage supply for Radio Transmitter T-67/ARC-3 and

Radio Receiver R-77/ARC-3, components of Radio Set AN/ARC-3, while they are being tested and aligned. Dynamotor Unit DY-21/ARC-3 generates the power for the radio transmitter and Dynamotor Unit DY-22/ARC-3 generates the power for the radio receiver. (See fig. 7-5.) Both dynamotors operate from a primary voltage source of 28 volts d-c. The radio receiver dynamotor unit runs continuously as long as any channel selector push button is depressed; but the radio transmitter dynamotor unit operates only when the microphone push-to-talk button is depressed. Both the input and output circuits of the dynamotor units are

adequately filtered to suppress their noise in the radio receiver. A fuse is provided in each high voltage circuit to prevent damage to the radio receiver and radio transmitter when an overload or short exists. The power junction box also contains relays K-401, K-402, K-403, K-404, K-405 and K-406. (See fig. 7-5.) These relays are associated with the tuning system of the radio transmitter and radio receiver. (Their action is fully described in section IV of the *Handbook of Maintenance Instructions for Radio Set AN/ARC-3*). In addition, this unit also serves as a junction box, providing the necessary interconnections between Control Box C-118/ARC-3, Radio Transmitter T-67/ARC-3 and Radio Receiver R-77/ARC-3.

b. CONTROL BOX C-118/ARC-3.—The control box provides for complete remote control of Radio Set AN/ARC-3. The major component of this unit is the nine-pole, push-button switch S-501 which is used for controlling the input power and selecting the desired frequency channels. Each of the eight channel buttons operates a corresponding crystal relay in both the radio transmitter and radio receiver. The identifying letters on each push button are filled with a fluorescent material so that they may be illuminated by means of an ultraviolet light. The equipment is off when the "OFF" button is depressed. In order to place the equipment in operation, it is necessary to push any one of the eight red push buttons. When this is done, a mechanical latch automatically releases the "OFF" button, closing switch S-501J. (See fig. 7-3.) This completes the ground connection for relay K-401, causing its contacts to close, thus connecting the A voltage to the radio receiver and radio transmitter tube heaters, to Dynamotor Unit DY-22/ARC-3, and to the tuning control relay circuits. The equipment then automatically tunes to the selected channel. Jack J-502 is provided to accommodate the headset. This is connected either to the audio output of the radio receiver or to the sidetone output of the radio transmitter, depending on which unit is being used. Microphone jack J-501 provides a connection for the audio input to the radio transmitter and also for the microphone push-to-talk button.

c. TEST UNIT TS-178/ARM-1.—The test unit is designed to check A and B voltages and the grid and plate currents in the various stages of the harmonic generator system for both the transmitter and the receiver of Radio Set AN/ARC-3.

A switch with eight positions is provided for selecting the various portions of the circuits to be measured. The shunt and series resistors for determining the proper meter range are automatically connected by means of this switch. (See fig. 7-1.) Some of these resistors are located in the test unit and others are in the radio transmitter and radio receiver. The normal full scale range of the test unit meter without the shunt and multiplier resistors is 50 microamperes. The scale reads from 0 to 100 with 50 calibration markings.

(1) ELECTRICAL CHARACTERISTICS OF THE TEST UNIT WHEN USED WITH RADIO TRANSMITTER T-67/ARC-3.

(a) "OSC" POSITION.—When the selector switch is set in "OSC" position, the meter indicates the grid current of the radio transmitter oscillator tube JAN-6V6GT (V-101). The 18-ohm shunt resistor R-102 which is located in the radio transmitter is shunted across the meter, making the full scale range of the meter approximately 6.2 milliamperes d-c.

(b) "1" POSITION.—With the selector switch in "1" position the meter indicates the grid current of the first harmonic generator tube JAN-6V6GT (V-102). A 39-ohm shunt resistor R-108 is provided in the radio transmitter, making full scale range of the meter approximately 2.9 milliamperes d-c.

(c) "2" POSITION.—In position "2" the meter indicates the grid current of the second harmonic generator tube JAN-832A (V-103). A 22-ohm shunt resistor R-113 in the radio transmitter makes the full scale reading approximately 5 milliamperes d-c.

(d) "3" POSITION.—Position "3" indicates the grid current in the power amplifier tube JAN-832A (V-104). A 22-ohm shunt resistor R-113 in the radio transmitter makes the full scale reading approximately 5 milliamperes d-c.

(e) "4 REC" POSITION.—This position is not used when aligning the radio transmitter.

(f) "4 TRANS" POSITION.—In "4 TRANS" position, the meter indicates the plate current in the power amplifier tube JAN-832A (V-104). A 560,000-ohm resistor R-126 is connected in series with the meter and this combination

is shunted by a 275-ohm resistor R-125A, making the full scale reading approximately 100 milliamperes d-c.

(g) "A+" POSITION. — A one-megohm multiplier resistor R-701 located in Test Unit TS-178/ARM-1 is connected in series with the meter. The full scale reading in "A+" position is 50 volts d-c.

(h) "B+" POSITION.—A 10-megohm multiplier resistor R-702 in the test unit is connected in series with the meter. The full scale reading in "B+" position is 500 volts d-c.

(2) ELECTRICAL CHARACTERISTICS OF TEST UNIT WHEN USED WITH RADIO RECEIVER R-77/ARC-3.

(a) "OSC" POSITION.—With the selector switch in "OSC" position the meter indicates the grid current in the fundamental amplifier tube JAN-6AK5 (V-202 and V-203). A 2200-ohm shunt resistor R-206, located in the radio receiver, is shunted across the meter, making the full scale range of the meter approximately 100 microamperes d-c.

(b) "1" POSITION.—In this position the meter indicates the grid current in the harmonic generator tube JAN-6AK5 (V-204). A 1000-ohm shunt resistor R-216 is provided in the radio receiver making the full scale range of the meter approximately 160 microamperes d-c.

(c) "2" POSITION.—In this position the meter indicates the grid current of the first harmonic amplifier tube JAN-6AK5 (V-205). A 10,000-ohm shunt resistor R-221 in the radio receiver makes the full scale reading approximately 61 microamperes d-c.

(d) "3" POSITION.—In this position the meter indicates the grid current in the second harmonic amplifier tube JAN-6AK5 (V-206). A 10,000-ohm shunt resistor R-228 in the radio receiver makes the full scale reading of the meter approximately 61 microamperes d-c.

(e) "4 REC" POSITION.—In this position the meter indicates the grid current in the first detector tube JAN-9001 (V-209). A 10,000-ohm shunt resistor R-244 in the radio receiver makes the full scale reading approximately 61 microamperes d-c.

(f) "4 TRANS" POSITION.—This position is not used when aligning the radio receiver.

(g) "A+" POSITION.—In this position a one-megohm resistor R-701 located in the test unit is connected as series with the meter. The full scale reading is approximately 50 volts d-c.

(h) "B+" POSITION.—In "B+" position a 10-megohm resistor R-702 in the test unit is connected in series with the meter. The full scale reading is approximately 500 volts d-c.

d. TUNING WAND MX-173/ARM-1.—The theory of the tuning wand is simply the fact that iron, when inserted into the field of a coil, increases its inductance while copper has the effect of decreasing its inductance. The tuning wand is used in conjunction with Test Unit TS-178/ARM-1 to check the resonance of the various tuned circuits in the radio transmitter and radio receiver. (See fig. 1-12.) In order to check the resonance of a circuit, either end of the tuning wand may be brought into the field of the coil. If the meter reading increases when the end containing the iron slug is put into the field, it indicates that additional inductance or capacitance is needed to resonate the circuit. If the meter reading increases when the copper end is brought into the field of the coil, it indicates that less inductance or capacitance is needed. If the circuit is in perfect tune, the meter reading will decrease when either end of the tuning wand is brought near the coil. In the power amplifier ("4 TRANS" on the test meter) of the radio transmitter, the *minimum* reading indicates resonance.

e. SHUNTING UNIT MX-294/ARM-1.—This unit is connected across the primary of the i-f transformers while the secondary is being aligned. It connects a resistance load across the unused coil, thus preventing any detuning effects which may be due to the coupling between the coils. A capacitor, in series with the resistor, prevents damage to the set if the unit is connected across the wrong terminals of the transformer. (See fig. 1-10.)

f. SHORTING PLUG U-30/ARM-1.—This plug has a five-prong base designed for plugging into the socket from which relay K-201 is removed during a part of the alignment of the radio receiver. (See fig. 1-9.) Pins No. 2 and No. 4 of the plug are connected together to short the contacts of the relay socket which are normally connected to the contacts of the tuning relay when it is plugged in.

AN 16-30ARM1-2

This permits motor B-201 to be started by depressing switch S-203.

g. ADAPTER PL-272.—This adapter is provided for connecting the output of Signal Generator I-96-A to the "ANTENNA" receptacle on the front panel of the radio receiver. One end of the adapter is machined to fit the "ANTENNA" receptacle of the radio receiver and the other, to fit the signal generator output connector.

h. ADAPTER MX-293/ARM-1.—This adapter consists of contact clips mounted on an insulated base and formed in such a manner so that when the adapter is installed on the variable capacitor frame of the radio receiver, contact is made with the grid pin of tube JAN-9001 (V-209) for the purpose of applying the signal generator's output to the grid of the first detector tube when the signal generator is connected to the adapter.

SECTION IV

MAINTENANCE

CAUTION

1. WHEN THE SET HAS BEEN TURNED OFF WAIT AT LEAST ONE MINUTE BEFORE TURNING ON AGAIN.
2. DO NOT RELEASE BUTTONS OR PUSH "OFF" BUTTON WHILE SET IS CYCLING.

Note

Periodic inspections prescribed herein represent minimum requirements. If because of local conditions, peculiarities of the equipment or abnormal usage, they are found insufficient to attain satisfactory operation of the equipment, local authority should not hesitate to increase their scope or frequency.

1. INSPECTION.

a. 25-HOUR INSPECTION.—After every 25 hours of operation, Radio Test Set AN/ARM-1 should be inspected in the manner outlined below.

(1) Check the contents of Chest CY-146/ARM-1. (Refer to par. 2, sec. I.)

(2) Check the condition of all cords and plugs.

(3) Make sure the mountings which hold the equipment are securely attached to the chest.

b. 100-HOUR INSPECTION.

WARNING

Operation of this equipment involves the use of high voltages which are dangerous to life. Operating personnel must at all times observe all safety precautions. Always turn off all power before performing internal inspections or maintenance work on this equipment.

After every 100 hours of operation, inspect Radio Test AN/ARM-1 to determine as early as possible the need for maintenance. In addition to the inspections listed in subparagraph a, make the following inspections.

(1) Remove the covers from each fuse clip on Power Junction Box J-68/ARC-3 and make sure the active fuse is held securely in the clips and that a spare fuse is provided for each circuit.

(2) Remove the end-bells from each dynamotor unit and inspect the condition of the brushes and commutators. Refer to paragraphs 5 and 7 of this section for cleaning and replacement procedure.

(3) Lubricate the dynamotor units as directed in paragraph 6 of this section.

(4) If practicable, connect the radio test set to Radio Set AN/ARC-3 and check the operation of the test equipment under actual test conditions. Refer to the inspection check procedure outlined in paragraphs 3 and 6 of section II.

2. TROUBLE SHOOTING.

a. GENERAL.—The most frequent operating difficulties can usually be repaired for the necessary adjustments made without disassembly of the major assemblies. Check the trouble symptoms against those listed in the trouble chart of subparagraph b. If it is impossible to correct the trouble by applying the suggested remedies given in the trouble chart, refer to paragraph 3.

b. TROUBLE CHART.—It is assumed that Radio Test Set AN/ARM-1 is connected to a

Radio Set AN/ARC-3 which is operating satisfactorily and that the trouble symptoms listed in the following chart are those localized to the radio test set.

<i>Trouble</i>	<i>Probable Location and Remedy</i>
Receiver dynamotor will not start.	Check input voltage connection; clean contacts of relay K-401; check input voltage source; check plug connections and cords, defective armature, control box or LV brushes.
Transmitter dynamotor will not start, receiver dynamotor operates normally.	Defective relay K-401 or K-402, LV brushes; open choke L-401, defective armature.
No HV available from receiver dynamotor.	No input voltage; defective fuse F-402, choke L-403, capacitor C-404 or C-405; defective armature, wiring or plug connection.
No HV available from transmitter dynamotor.	No input voltage; defective fuse F-401, choke L-402, capacitor C-402 or C-403; defective armature, wiring or plug connection.
Impossible to select channels by depressing push buttons on Control Box C-118/ARC-3.	Defective switch S-501 in control box; defective receiver or transmitter of Radio Set AN/ARC-3; defective wiring or plug connections.
No reading obtained on Test Unit TS-178/ARM-1 with the selector switch in any position.	Defective selector switch, meter or wiring.
No reading obtained in one or more positions of the selector switch but normal readings obtained in other positions.	Defective shunt or multiplier resistor (refer to sec. III, par. 2 c); defective selector switch or wiring.

3. TROUBLE SHOOTING AT REPAIR DEPOT.

Systematic operating tests should be made to definitely determine the nature of the trouble existing in the test equipment. Do not make random tests as valuable time can be saved by following the procedure outlined.

a. Check the operation of the test equipment and localize the operating difficulties to the section of the assembly by the use of the trouble chart given in the preceding paragraph.

b. Troubles which cannot be located or corrected by the use of the trouble chart will require a more detailed test procedure. Check the various components of each assembly where trouble exists by use of an ohmmeter and the resistance charts.

TABLE 4-1. RESISTANCE MEASUREMENTS FOR POWER JUNCTION BOX J-68/ARC-3

See Figure 7-5.

<i>Connector</i>	<i>From</i>	<i>To</i>	<i>Resistance in Ohms</i>
P-401	Pin 1	P-403 Pin C	225
	Pin 2	Ground	0
	Pin 3	P-403 Pin C	225
P-402	Pin 1	P-403 Pin V	0
	Pin 2	P-403 Pin K	0
	Pin 3	P-403 Pin Q	0
	Pin 4	P-403 Pin R	0
	Pin 5	Ground	0
	Pin 6	P-403 Pin W	0
	Pin 7	P-403 Pin Y	0
	Pin 8	P-403 Pin X	0
	Pin 9	P-403 Pin Z	0
	Pin 10	Ground	185
	Pin 11	P-403 Pin A	0
	Pin 12	Ground	190
	Pin 13	Ground	1.5
	Pin 14	K-406 Term 2	0
	Pin 15	P-403 Pin U	0
	Pin 16	Ground	150
P-403	Pin B	Ground	150
	Pin E	Ground	0
	Pin J	Ground	0
	Pin M	Ground	400
	Pin P	Ground	1.5
P-404	Pin 1	P-403 Pin V	0
	Pin 2	P-403 Pin K	0
	Pin 3	P-403 Pin Q	0
	Pin 4	P-403 Pin R	0
	Pin 5	P-403 Pin W	0
	Pin 6	P-403 Pin Y	0
	Pin 7	Ground	0
	Pin 8	P-403 Pin X	0
	Pin 9	P-403 Pin Z	0
	Pin 10	Ground	0
	Pin 11	Ground	400
	Pin 12	Ground	190
	Pin 13	Ground	150
	Pin 14	P-403 Pin D	0
	Pin 15	Ground	1.5
	Pin 16	P-403 Pin D	0
	Pin 17	P-403 Pin A	0
	Pin 18	Ground	Infinite
P-405	Pin 1	Ground	1.5
	Pin 2	Ground	0
	Pin 3	Ground	85
P-406	Pin 1	Ground	15
	Pin 2	Ground	0
	Pin 3	Ground	140

c. Resistance measurements for Control Box C-118/ARC-3 follow.

TABLE 4-2. RESISTANCE MEASUREMENTS FOR CONTROL BOX C-118/ARC-3

See Figure 7-3.

<i>Connector</i>	<i>From</i>	<i>To</i>	<i>Resistance in Ohms</i>
P-501	Pin A	J-501 Term 1	0
	Pin B	J-501 Term 2	0

**TABLE 4-2. RESISTANCE MEASUREMENTS
FOR CONTROL BOX C-118/ARC-3 (Cont.)**

Connector	From	To	Resistance in Ohms
P-501	Pin C	S-501 Pin J	0
	Pin D	J-502	0
	Pin E	Ground	0
	Pin F	P-501 Pin D	1,000
	Pin G	Ground	270
	Pin H	P-501 Pin F	0
	Pin J	S-501 Common	0
	Pin K	S-501 Term B	0
	Pin Q	S-501 Term C	0
	Pin R	S-501 Term D	0
	Pin U	Ground	Infinite
	Pin V	S-501 Term A	0
	Pin W	S-501 Term E	0
	Pin X	S-501 Term G	0
	Pin Y	S-501 Term F	0
	Pin Z	S-501 Term H	0

**TABLE 4-3. RESISTANCE MEASUREMENTS
FOR TEST UNIT TS-178 ARM-1****CAUTION**

When checking connector J-701, do not measure resistance to ground on pins 1, 2, 3, 5 and 6, as damage to meter may result. See figure 7-1.

From	To	Resistance in Ohms
J-701 Pin 1	S-701 "OSC" terminal front sector	0
Pin 2	S-701 "1" terminal front sector	0
Pin 3	S-701 "2" terminal front sector	0
Pin 4	Ground	0
Pin 5	S-701 "3" terminal front sector	0
Pin 6	S-701 "4" REC" terminal front sector	0
Pin 7	S-701 "A+" terminal rear sector	1 megohm
Pin 8	S-701 "B+" terminal rear sector	10 megohms
S-701 "4" TRANS" terminal front sector	Ground	0
"A+" terminal front sector	Ground	0
"B+" terminal front sector	Ground	0
"OSC" terminal rear sector	Ground	0
"1" terminal rear sector	Ground	0
"2" terminal rear sector	Ground	0
"3" terminal rear sector	Ground	0
"4 REC" terminal rear sector	Ground	0
"4 TRANS" terminal rear sector	"4 REC" terminal front sector	

**TABLE 4-4. 1000-CYCLE INDUCTANCE
MEASUREMENTS**

Coil	Inductance	A-C Voltage	D-C in Winding
L-402	.55 mh	15 v	325 ma
L-403	1.0 mh	15 v	125 ma

4. FUSE REPLACEMENT.

a. Fuses for the high voltage circuit of the radio transmitter and radio receiver together with a spare for each are located beneath each of the two metal covers on Power Junction Box J-68/ARC-3. The radio transmitter fuse cover will be found at the left end of the transmitter dynamotor unit. The radio receiver fuse cover is situated at the right end of the receiver dynamotor unit. These covers may be removed by releasing the snapslide on top of each. (See fig. 5-1.)

b. A visual check will indicate the condition of the fuse. A spare fuse, for replacement of a burned out fuse, is provided in a holder adjacent to each operating fuse and is so marked. Additional fuses for replacement purposes are packed in Radio Test Set AN/ARM-1. The larger Dynamotor Unit DY-21/ARC-3 supplies high voltage to the radio transmitter and Dynamotor Unit DY-21/ARC-3 supplies the high voltage to the radio receiver. The fuses located adjacent to either dynamotor unit protect that dynamotor unit in case of short circuit or overload in the radio transmitter or the radio receiver, respectively. Repeated burnouts indicate either a defective tube, radio transmitter, radio receiver or some other cause of high current and the trouble must be corrected.

c. A bayonet-type fuse holder situated in one lead of Cord CX-217/ARM-1 contains a 25-ampere fuse for the entire equipment. Fuses for replacement purposes are contained in the radio test set.

5. REPLACEMENT OF DYNAMOTOR BRUSHES.**WARNING**

Do not attempt to replace brushes when the dynamotors are running. Always turn off all power.

a. Low or erratic high voltage or excessive noise in the headsets usually indicates defective dynamotor brushes. Remove the end covers on the dynamotor, unscrew the bakelite brush-holder caps

and examine the brushes. Replace any brush worn in excess of one-half its original length. A complete set of new brushes will be found in the small metal can mounted on a bracket beneath the high voltage end cover of both dynamotors.

b. Replace the drive motor brushes when worn in excess of one-half their original length. Two metal screws, in the housing of the low-voltage end of the dynamotor, provide access to the brushes.

6. LUBRICATION.

The only assemblies of Radio Test Set AN/ARM-1 which require lubrication are the dynamotors of Power Junction Box J-68/ARC-3. Using Grease AN-G-5, lubricate Dynamotor Unit DY-21/ARC-3 every 200 hours and Dynamotor Unit DY-22/ARC-3 every 500 hours.

CAUTION

Do not over-lubricate. Excessive lubrication can cause serious damage to the commutators.

7. CLEANING DYNAMOTOR COMMUTATORS.

WARNING

A high voltage which is dangerous to life exists at the high voltage end of each dynamotor unit. Turn off all power when inspecting the condition of the commutators. When cleaning the commutators use extreme caution to prevent direct contact with the high voltage.

After each 300 hours of operation the end covers of the dynamotor units should be removed and the commutators inspected. The normal color of the commutator, after the dynamotor has been in use, is a dull brown. When this color darkens excessively, the commutator should be cleaned by applying a strip of coarse canvas to the commutator while the dynamotor is operating. If the commutator appears to be burned or extremely discolored it should be cleaned with a strip of No. 00 sandpaper. Do not apply excessive pressure on the sandpaper as needless wear on the commutator will result. Blow out all particles of carbon and copper dust after cleaning the commutator.

CAUTION

Never use emery cloth to clean or resurface a commutator. The metallic abrasive of emery cloth can cause shorts between the commutator bars resulting in unsatisfactory operation.

8. CALIBRATION.

a. GENERAL.—This equipment will be inspected at intervals of 90 days to determine the accuracy of the calibration.

b. TEST EQUIPMENT REQUIRED.—Meter Test Equipment AN/GSM-1 is required to calibrate Test Unit TS-178/ARM-1.

c. CALIBRATION PROCEDURES.

(1) Remove Test Unit TS-178/ARM-1 from case. (See fig. 5-3.)

(2) Remove the two wire leads from meter studs.

(3) Remove the three nuts holding meter to panel.

(4) Depress knob on top of Mounting MT-175/GSM-1 and place meter M701 in adjustable mounting holes, release knob.

(5) Check to see that all controls on Current Supply Unit PP-15/GSM-1 are in extreme counter-clockwise position.

(6) Connect the spade end of test cord, that has Plug PL-68 on one end, to the positive terminal on rear of Mounting MT-175/GSM-1.

(7) Connect one end of test cord, that has spade connections on both ends, to negative terminal of Mounting MT-175/GSM-1.

(8) Connect other spade end of test cord step (7) to "LOW AMPS." terminal on current supply unit.

(9) Connect range-selector shorting link on current supply unit to "OTHER RANGES" position.

(10) Insert Plug PL-68 into the "150" output jack on panel of current supply unit.

(11) Turn the power switch to "D.C." position.

(12) Turn the carbon-pile control knob slowly clockwise until 10 microamperes is obtained on the standard d-c meter.

(13) Make a fine adjustment of the scale reading by rotating the rheostat control knob.

(14) Compare the reading of the standard d-c meter with that of meter M701.

(15) Slight adjustments may be made on meter M701 using zero adjust screw on the meter. Avoid excessive adjusting of this screw to keep from bending the needle.

(16) Repeat steps (12) through (14) testing meter M701 throughout the 0-50 microamperes range.

(17) If the accuracy of meter M701 cannot be brought within ± 2 percent, replace meter.

(18) Turn power switch to "OFF" position.

(19) Replace meter M701 in Test Unit TS-178/ARM-1 and replace test unit in case.

SECTION V

SUPPLEMENTARY DATA

1. DYNAMOTOR DATA.

a. DYNAMOTOR UNIT DY-21/ARC-3.—The input and output voltage and current ratings for this dynamotor are listed below.

Input voltage.....28 volts direct current
 Full load input current.....7 amperes
 No load input current.....1 ampere
 Full load intermittent output voltage
410 volts direct current
 Intermittent current (30 seconds on, 30
 seconds off)325 milliamperes
 No load output voltage.. 450 volts direct current

b. DYNAMOTOR UNIT DY-22/ARC-3.—The input and output voltage and current ratings for this dynamotor are listed below.

Input voltage.....28 volts direct current
 Full load input current.....1.8 amperes
 No load input current......8 amperes
 Full load continuous output voltage
210 volts direct current
 Continuous current drain....125 milliamperes
 No load output voltage..230 volts direct current

2. FUSE COMPLEMENT.—The following table list the fuse complement.

<i>Ref. Symbol</i>	<i>Stock No.</i>	<i>Description</i>	<i>Function</i>	<i>Spares</i>	<i>Mfgs. Type No.</i>
F-401	3Z2595.6	Fuse, cartridge, ½ amp, 250 v; one-time glass body	Transmitter high voltage fuse	In clip adjacent to active fuse	Littelfuse No. 1007
F-402	3Z2595.6	Same as F-401	Receiver high voltage fuse	In clip adjacent to active fuse	Same as F-401
F-701	3Z2625.8	Fuse, cartridge; 25 amp, 25 v; one-time glass body	Input voltage fuse	Radio test set chest	Buss type 3AG25

3. TEST UNIT METER.

The meter used in Test Unit TS-178/ARM-1 has a 0 to 50 microampere d-c D'Arsonval move-

ment with an accuracy of ± 2 percent. Various shunt and multiplier resistors are connected to the meter by the selector switch on the panel of the test unit.



AN 16-30ARM1-2

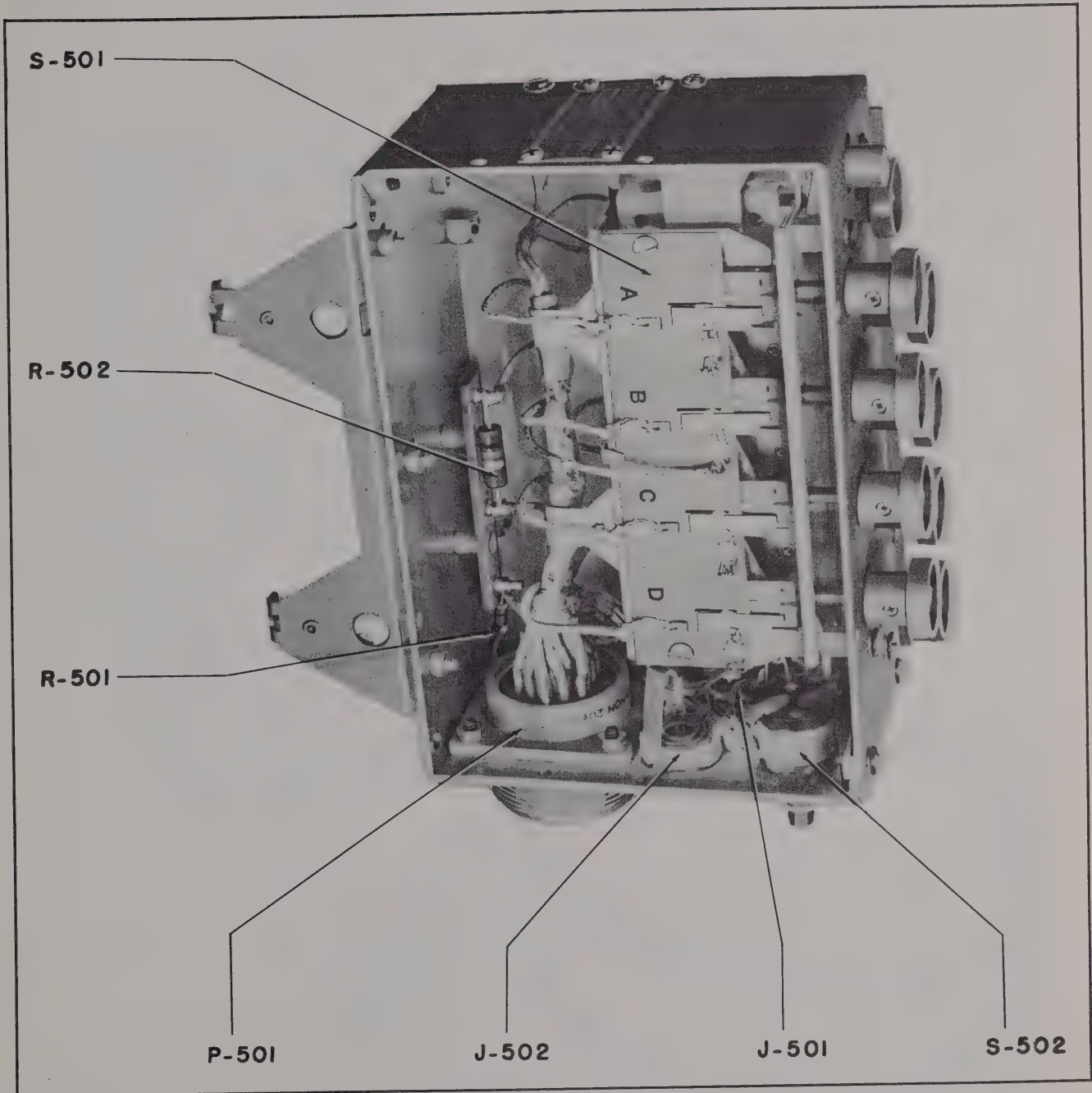


Figure 5-2. Control Box C-118/ARC-3 — with Side Cover Removed

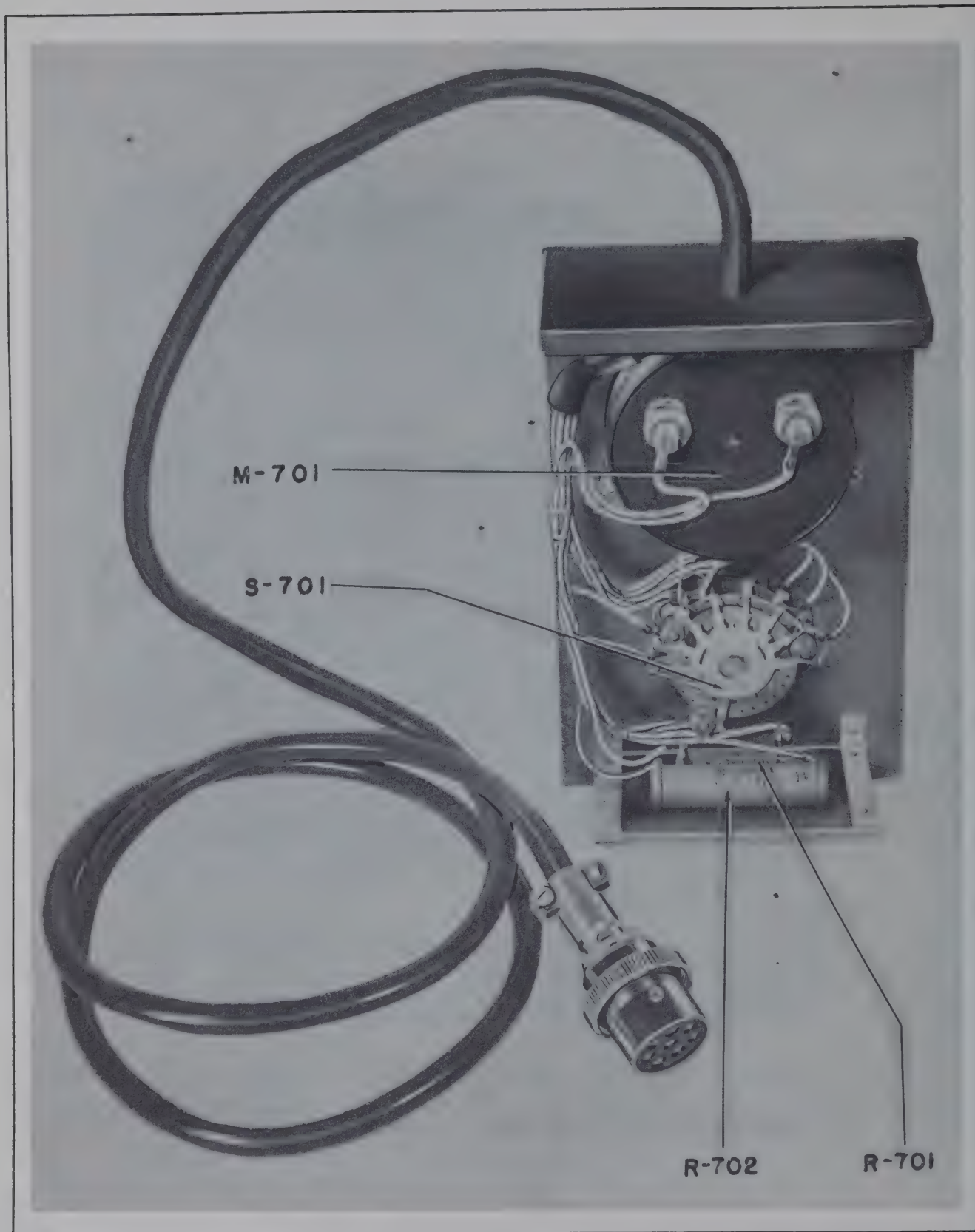


Figure 5-3. Test Unit TS-178/ARM-1 — with Case Removed

SECTION VI

PARTS CATALOG

Introduction

Table of Parts

The parts listed in this table do not constitute a complete electrical and mechanical breakdown of the equipment. The table lists all electrical parts together with such operative mechanical parts as are subject to loss or failure, with the exception of structural and minor parts such as standard bolts, screws, nuts, and the like. In some instances individual detail parts of a sub-assembly may not be listed as separate items, since replacement of such items is impractical.

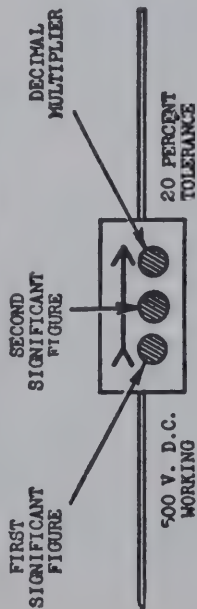
Ordering of Spare Parts

Each Service using this list has established certain depots and service groups for the storage and issue of spare parts to its organizations requiring them. The regulations of each Service should be studied to determine the method and source for requisitioning spare parts. The information in this list, as to manufacturer's or contractor's name, type, model, or drawing number, is not to be interpreted as authorization to field agencies to attempt to purchase identical or comparable spare parts directly from the manufacturer or a wholesale or retail store except under emergency conditions as covered by existing regulations of the Service concerned.

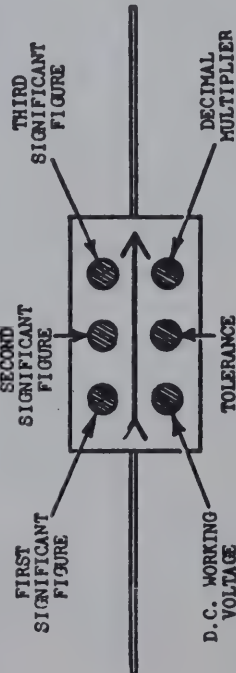
U. S. Army Personnel: This table is for information *only* and is not to be used as a basis for requisitioning parts. Authorities for obtaining maintenance items are as follows: 1. For using organizations: applicable Service publications of the 00-30 series of AAF Technical Orders. 2. For higher maintenance and supply echelons: applicable Service publications of the 08-55 series of AAF Technical Orders.

RMA COLOR CODES

CAPACITORS (MMFD)



COLOR	NUMERAL	VOLTS	MULTIPLIER	TOLERANCE
BLACK	0		1	1%
BROWN	1	100	10	2%
RED	2	200	100	3%
ORANGE	3	300	1,000	4%
YELLOW	4	400	10,000	5%
GREEN	5	500	100,000	6%
BLUE	6	600	1,000,000	7%
VIOLET	7	700	10,000,000	8%
GRAY	8	800	100,000,000	9%
WHITE	9	900	1,000,000,000	5%
GOLD		1000	0.1	10%
SILVER		2000	0.01	20%
NO COLOR		500		



RESISTORS (OHMS)

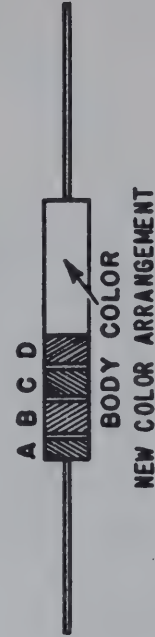
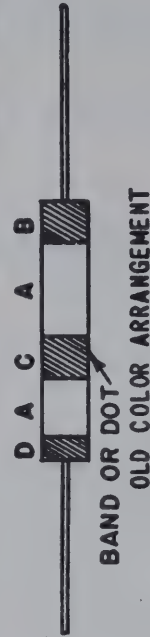
COLOR	A 1ST DIGIT	B 2ND DIGIT	C MULTIPLIER
SILVER			0.01
GOLD			0.1
BLACK		0	1.0
BROWN		1	10
RED		2	100
ORANGE		3	1,000
YELLOW		4	10,000
GREEN		5	100,000
BLUE		6	1,000,000
PURPLE		7	10,000,000
GRAY		8	100,000,000
WHITE		9	1,000,000,000

D - TOLERANCE CODE:

GOLD = 5%

SILVER = 10%

NO COLOR = 20%



BODY COLOR (NEW COLOR ARRANGEMENT ONLY) INDICATES
TYPE OF RESISTOR, AS FOLLOWS:-

BLACK - COMPOSITION, NON-INSULATED
TAN, OLIVE OR WHITE - COMPOSITION, INSULATED
DARK BROWN - WIRE-WOUND, INSULATED

RMA

TABLE OF PARTS

MODEL: RADIO TEST SET AN/ARM-1

Reference Symbol	Army Stock No. Navy Stock No. British Ref. No..	Name of Part and Description	Function	Mft. and Desig. or Standard Type	Cont. or Gout. Dwg. or Spec. No.
701-799 series	3F4037-1 — —	CHEST CY-146/ARM-1, test: Sig C Radio Test Set AN/ARM-1; steel; w/contents; includes: 2—Cap MX-506/ARM-1 1—Power Junction Box J-68/ARC-3 1—Dynamotor Unit DY-21/ARC-3 1—Dynamotor Unit DY-22/ARC-3 1—Mounting Base MT-236/ARC-3 1—Control Box C-118/ARC-3 1—Mounting FT-240-A 1—Test Unit TS-178/ARM-1 2—Adapter PL-272 1—Adapter MX-293/ARM-1 1—Shorting Plug U-30/ARM-1 1—Shunting Unit MX-294/ARM-1 1—Alignment Tool MX-174/ARM-1 1—Tuning Wand MX-173/ARM-1 1—Set of Relay Forming Tools 1—Cord CX-214/ARM-1 1—Cord CX-215/ARM-1 1—Cord CX-216/ARM-1 1—Cord CX-217/ARM-1 1—Crystal Unit CR-1A/AR (5555.555 kc) 1—Crystal Unit CR-1A/AR (6944.444 kc) 1—Crystal Unit CR-1A/AR (8000.000 kc) 1—Crystal Unit CR-1A/AR (8100.000 kc) 1—Crystal Unit CR-1A/AR (8458.823 kc) 1—Crystal Unit CR-1A/AR (8727.000 kc) 10—Fuse, cartridge; ½ amp, 250 v. 10—Fuse, cartridge, 25 amp., 25 v. 17½" lg x 15¼" wd x 9⅞" h, including handle clearance; one folding type handle on front; spring clips in the lid hold the smaller pieces in place. CAPACITOR, fixed: ceramic; 500 mmf ± 20%; 250 vdcw; .562" max lg x .250" max diam; (ceramic case; wax impregnation; 2 axial wire leads 1¼" minl g); part of E-706.	Test set for Radio set AN/ARC-3	Colonial Rad	
C-701	*		Blocking for resistor R-703	Muter type 11K1200 Erie type Hi K, style K	55366
E-701	229404.159 — —	BOARD, terminal: 4 brass cadmium-plated term; molded bakelite; 3¼" lg x 1¾" wd x ¾" thk; (2 CRS brackets, "L" type for mtg; 2 holes tapped #4-40 on 2½" mtg/c).	Mts resistor R-701 and R-702	Rittenhouse	56247-1

*Not available as a spare part; listed for reference only.

TABLE OF PARTS—Continued

MODEL: RADIO TEST SET AN/ARM-1

Reference Symbol	Army Stock No. Navy Stock No. British Ref. No.	Name of Part and Description	Function	Mft. and Desig. or Standard Type	Cont. or Govt. Dwg. or Spec. No.
E-702	2Z5821-5 — —	KNOB, bar: black bakelite; for $\frac{1}{4}$ " diam shaft; single #8-32 set screw; $1\frac{1}{2}$ " lg x $1\frac{9}{16}$ " h x $2\frac{1}{2}$ " wd overall (shaft hole $\frac{1}{2}$ " d); p/o Army-Navy Test Unit TS-178/ARM-1.	Meter selector-switch knob	Crowe Type 286	56256
E-703	2Z7226-272 — —	ADAPTER, connector: Sig C Adapter PL-272; male one end, female other end; 1 round cont, ea. end; straight; adapts Sig C connector plug PL-P173, to Sig C connector socket SO-239; $1\frac{1}{8}$ " lg x .992" OD; (cylindrical brass body, cadmium-plated; molded bakelite insert; diamond knurl).	Adapts Sig Gen I-96 ant connector to Radio Transmitter T-67/ARC-3 transmitter connector	Amphenol Type 83-1M-PL272	55959-1
E-704	2Z301-293 — —	ADAPTER, connector: Army-Navy Adapter MX-293/ARM-1; 2 lugs for $\frac{9}{16}$ " c to c binding posts one end, spring term 1" lg on side; $1\frac{1}{16}$ " lg x $1\frac{1}{16}$ " wd x $2\frac{1}{4}$ " thk, less cont; (bakelite insulating plate; spring clip for mtg on $1\frac{1}{16}$ " wd plate).	Adapts Sig Gen I-96 Connector to Radio Receiver R-77/ARC-3 1st detector grid	Rittenhouse	56274-1
E-705	2Z7250-30 — —	PLUG, shorting: Army-Navy Shorting Plug U-30/ARM-1; 5 round male cont; $1\frac{1}{4}$ " lg x $1\frac{5}{16}$ " diam, less cont; (bakelite body; pins #2 and #4 connected together within shell).	Replaces tuning relay for harmonic alignment	Rittenhouse	56088-1
E-706	3F3989-294 — —	SHUNTING UNIT: Army-Navy Shunting Unit MX-294/ARM-1; black bakelite; overall dimen. $1\frac{1}{16}$ " wd x $1\frac{3}{8}$ " h x .180" thk, less cont; (includes C-701 and R-703; two $\frac{3}{16}$ " diam holes w/spring cont, spaced $\frac{3}{4}$ " c to c).	Loads i-f windings during i-f alignment	Rittenhouse	56267-1
E-707	* — —	HOLDER, fuse: Retainer type; for single 3AG fuse; brass, cadmium plated; 25 amp, 25 v; $2\frac{1}{16}$ " lg x $\frac{1}{2}$ " diam; (2 solder lug end caps; p/o Army-Navy Cord CX-217/ARM-1).	Holds fuse F-701	Littlefuse Part 1089-ZA	56090
F-701	3Z2625-8 — —	FUSE, cartridge: 25 amp, 25 v; one-time; glass body; ferrule ends $\frac{1}{4}$ " diam x $\frac{1}{4}$ " lg; overall dimen $1\frac{1}{4}$ " lg x $\frac{1}{4}$ " diam.	Input voltage fuse	Buss Type 3AG25	56091
H-701	6Q340-174 — —	TOOL, alignment: Army-Navy Alignment Tool MX-174/ARM-1; bakelite w/plastic handle; $6\frac{11}{16}$ " lg x $1\frac{1}{16}$ " diam overall; $\frac{1}{16}$ " wd metal nib screw-driver.	Adjustment of aligning screws	Rittenhouse	56077-1
H-702	3F3989-173 — —	TOOL, alignment: Army-Navy Tuning Wand MX-173/ARM-1; clear plastic; 6" lg x $1\frac{3}{16}$ " wd x $1\frac{3}{4}$ " thk; copper slug at one end, powdered iron slug at opposite end.	Indicates circuit resonance	Rittenhouse	56084-1
H-703	6R41065C — —	BURNISHER, contact: bakelite case w/pocket clip; 4 $31/32$ " lg x $13/32$ " diam; contains chuck for holding burnishing blades; (magazine holds 6 steel blades $1\frac{1}{2}$ " lg x $3/16$ " wd x .0035" thk and 6 steel picks $1\frac{1}{4}$ " lg x .024" diam).	Burnishes relay contacts	WE Co Type 265C	56039

AN 16-30ARM1-2

H-704	6RK41070	TOOL, contact forming: right angle steel shank w/.018" slotted end; bakelite handle; overall dimen 3 7/8" lg x 1/4" diam.	Forming relay cont.	WE Co Type 270	56040
H-705	6RK41163	TOOL, contact forming: straight steel shank w/.018" slotted end; bakelite handle; overall dimen 4" x 1/2" diam.	Forming relay contacts	WE Co Type 363	56041
H-706	6RK41335A	TOOL, contact forming: 30 deg angle steel shank w/.018" slotted end; overall dimen 3-25/32" lg x 1/2" diam.	Forming relay contacts	WE Co Type 535A	56042
H-707	—	NUT, cap: Army-Navy Cap MX506/ARM-1; aluminum, caustic dipped; 3/8"-32; 3/16" h; 1/2" wd across flats.	Locks motor switch	Rittenhouse	55557
J-701	2Z7226-152	CONNECTOR, female contact: Army-Navy Plug PL-152; 8 round female contact; straight; 1 1/8" lg x 5/16" diam less mtg ring and ferrule; cylindrical aluminum body; molded black bakelite insert; cable opening 1/2" diam; knurled mtg ring with 1 1/8" #24 inside thd; p/o Army-Navy Test Unit TS-178/ARM-1).	Connects test unit to transmitter or receiver	Novelty Tool	56098-1
M-701	3F865-17	METER, microammeter: d-c; 0 to 50 ua; round, bakelite flush mtg case; 3 1/2" diam flange x 2 3/4" diam body x 1 1/2" d; (accuracy = 2%; D'Arsonval movement; calibrated for .040" steel panel; scale 0-100, 50 divisions; black numerals on white background; self-contained; 3 mtg holes .150" diam on 1.58" rad spaced 120 deg on flange; 2 studs 1/4" -28 thd, 1/2" lg spaced 1" c to c; p/o Army-Navy Test Unit TS-178/ARM-1).	Indicates transmitter and receiver voltages and grid currents	Weston Model 301	56240
R-701	3Z6801-85	RESISTOR, fixed; composition; 1 meg $\pm 1\%$; 1 w; 9/32" diam x 1" lg; (enamel insulation; 2 radial wide leads 1 1/2" lg; temp coef —11% uer °C; p/o Army-Navy Test Unit TS-178/ARM-1).	Meter series resistor for measuring input voltage	Concarbon Type X-1	56249
R-702	3Z6810-14	RESISTOR, fixed; composition; 10 meg $\pm 1\%$; 5 w; 17/32" diam x 2" lg; (enamel insulation; 2 radial wire leads 1 1/2" lg; temp coef —11% uer °C; p/o Army-Navy Test Unit TS-178/ARM-1).	Meter series resistor for measuring high voltage	Concarbon Type X-5	56250
R-703	*	RESISTOR, fixed; composition; 680 $\pm 5\%$ 1/2 w; .468" max lg x .249" max diam; (bakelite insulation; 2 axial wire leads 1 1/4" lg p/o E-706).	I-F coil shunt	RC20AF681J	55917
S-701	3Z9826-53	SWITCH, rotary: 2 pole, 8 position; 2 decks; bakelite wafers; 2 1/6" diam x 1 3/4" lg overall; (non-shorting cont; shaft 1/4" diam x 2 1/2" lg; bushing 3/8" diam x 1/4" lg with #32 thd; solder lug term; p/o Army-Navy Test Unit TS-178/ARM-1).	Selects circuit to be measured by test unit	J-B-T Instr.	56242
W-701	3E6000-214	CABLE ASSEMBLY, control: Army-Navy Cord CX-214/ARM-1; general purpose; no outer jacket; approx 1/2" diam; 12" lg; 15 #20 AWG stranded copper cond; (rayon insulated cond; color coded; Army-Navy plug U-16/U on ea end).	Connects control box to power junction box	Rittenhouse	56292-1
W-702	3E6000-215	CABLE ASSEMBLY, control: Army-Navy Cord CX-215/ARM-1; general purpose; no outer jacket; approx 1/2" diam; 60" lg; 11 #20 AWG stranded copper cond, 2 #16 AWG stranded copper cond; (rayon insulated cond; color coded; Sig C Plug PL-153-A connector on ea end).	Connects power junction box to receiver	Rittenhouse	56293-1
W-703	3E6000-216	CABLE ASSEMBLY, control: Army-Navy Cord CX-216A/ARM-1; general purpose; no outer jacket; approx 1/2" diam 60" lg; 14 #20 AWG stranded copper cond, 2 #16 AWG stranded copper cond; (rayon insulated cond; color coded; Army-Navy Plug U-15/U on one end, Army-Navy Plug U-15/U and Signal Corps Plug PL-151A on other end).	Connects power junction box to transmitter	Rittenhouse	56294-1

*Not available as a spare part; listed for reference only.

TABLE OF PARTS—Continued

MODEL: RADIO TEST SET AN/ARM-1

Reference Symbol	Army Stock No. Navy Stock No. British Ref. No.	Name of Part and Description	Function	Mft. and Desig. or Standard Type	Cont. or Gool. Dwg. or Spec. No.
W-704	3E6000-217 — —	CABLE ASSEMBLY, power: Army-Navy Cord CX-217/ARM-1; general purpose; no outer jacket; 10' lg; 2#14 AWG stranded copper cond; (rayon insulated cond; color coded; Sig C Plug PL-148A on one end; holder for type 3AG fuse in one wire).	Connects power junction box to battery	Rittenhouse	56295-1
Y-701	* — —	CRYSTAL UNIT, quartz: Army-Navy Crystal Unit CR-1A/AR; single wafer; freq 555.555 kc; bakelite holder; $1\frac{1}{8}$ " wd x $1\frac{3}{16}$ " h x $\frac{7}{16}$ " thk, transmitting; (two $\frac{5}{8}$ " lg x $\frac{1}{8}$ " diam pins, spaced $\frac{1}{2}$ " c to c).	Tunes transmitter to 100 mc alignment channel	AWSC75.11-1944	56033
Y-702	* — —	CRYSTAL UNIT, quartz: Army-Navy Crystal Unit CR-1A/AR; single wafer; freq 6944.444 kc; bakelite holder; $1\frac{1}{8}$ " wd x $1\frac{3}{16}$ " h x $\frac{7}{16}$ " thk; transmitting; (two $\frac{5}{8}$ " lg x $\frac{1}{8}$ " diam pins, spaced $\frac{1}{2}$ " c to c).	Tunes transmitter to 125 mc alignment channel	AWS C75.11-1944	56034
Y-703	* — —	CRYSTAL UNIT, quartz: Army-Navy Crystal Unit CR-1A/AR; single wafer; freq 8000.000 kc; bakelite holder; $1\frac{1}{8}$ " wd x $1\frac{3}{16}$ " h x $\frac{7}{16}$ " thk; receiving; (two $\frac{5}{8}$ " lg x $\frac{1}{8}$ " diam pins, spaced $\frac{1}{2}$ " c to c).	Tunes receiver to 100 and 156 mc alignment channel	AWS C75.11-1944	56035
Y-704	* — —	CRYSTAL UNIT, quartz: Army-Navy Crystal Unit CR-1A/AR; single wafer; freq 8100.000 kc; bakelite holder; $1\frac{1}{8}$ " wd x $1\frac{3}{16}$ " h x $\frac{7}{16}$ " thk; receiving; (two $\frac{5}{8}$ " lg x $\frac{1}{8}$ " diam pins, spaced $\frac{1}{2}$ " c to c).	Alignment of fund amplr	AWS C75.11-1944	56036
Y-705	* — —	CRYSTAL UNIT, quartz: Army-Navy Crystal Unit CR-1A/AR; single wafer; freq 8458.823 kc; bakelite holder; $1\frac{1}{8}$ " wd x $1\frac{3}{16}$ " h x $\frac{7}{16}$ " thk; transmitting; (two $\frac{5}{8}$ " lg x $\frac{1}{8}$ " diam pins, spaced $\frac{1}{2}$ " c to c).	Tunes to 156 mc alignment channel	AWS C75.11-1944	56037
Y-706	* — —	CRYSTAL UNIT, quartz: Army-Navy Crystal Unit CR-1A/AR; single wafer; freq 8727.000 kc; bakelite holder; $1\frac{1}{8}$ " wd x $1\frac{3}{16}$ " h x $\frac{7}{16}$ " thk; receiving; (two $\frac{5}{8}$ " lg x $\frac{1}{8}$ " diam pins, spaced $\frac{1}{2}$ " c to c).	Crystal osc alignment	AWS C75.11-1944	56038

MAJOR ASSEMBLY: POWER JUNCTION BOX J-68/ARC-3

401-499 series	3H2676-68 — —	POWER JUNCTION BOX J-68/ARC-3: plate and filament supply; max output 410 v d-c 325 ma, 210 v d-c @ 125 ma, and 28 v d-c @ 4 amp; input 28 v d-c @ 13.5 amp; $10\frac{1}{4}$ " lg x $8\frac{1}{2}$ " wd 7" h; (built-in d-c filter; one $1\frac{1}{8}$ " threaded outlet, three $1\frac{5}{8}$ " threaded outlets; includes Dynamotor Units DY-21/ARC-3 and DY-22/ARC-3 and Mounting MT-236/ARC-3).	Supply power for receiver and transmitter of Radio Set AN/ARC-3 when it is under test interconnections	Colonial Rad	55871-1
A-401	2Z8405-16 — —	MOUNT, vibration: round; 50 lb shock load, 5 lb static load; 1.118" diam x $1\frac{1}{16}$ " h; (rubber cushion $1\frac{1}{32}$ " diam x $\frac{1}{8}$ " thk overall; steel center sleeve, with snap-slide pin; 3 mntg holes, tapped #4-40, 120 deg spacing on $\frac{5}{16}$ " rad; assembled with ground strap); part of Mounting Base MT-236/ARC-3.	Mounts power Junction box	Scovill part 48-659	55911-1

AN 16-30ARM1-2

A-402	2Z8405-17 — —	MOUNT, vibration: round; 50 lb shock load, 5 lb static load; 1.118" diam x 1 1/16" h; (rubber cushion 1 1/32" diam x 1/2" thk overall; steel center sleeve, with snap-slide pin; 3 mtg holes, tapped #4-40, 120 deg spacing on 3/16" rad); part of Mounting Base MT-236/ARC-3. MOUNT, vibration: same as A-401.	Mounts power junction box	Scovill part 48-658	55930-1
A-403			Mounts power junction box		55911-1
A-404			Mounts power junction box		55930-1
A-405	2Z1239-45 — —	BRACKET ASSEMBLY, relay: "L" shape: CRS cadmium-plated; assembled with molded bakelite board; 2 7/32" lg x 3/4" wd x 2 9/16" h overall; (3 mtg holes, tapped #6-32 on 2 3/4" x 1/4" mtg /c; marked "K-403", "K-405", "K-404" and "DO NOT BURNISH RELAY CONTACTS WHEN POWER IS ON").	Mounts relays K-403, K-404, K-405	Colonial Rad	55253-1
C-401	3DB1.230-1 — —	CAPACITOR, fixed: paper; 1mf +40% —15%; 200 vdvw; 2" lg x 1 3/4" wd x 1 1/8" max thk (metal case; hermetically sealed; filled with potting compound; 1 terminal on side; 2 mtg lugs with 3/16" diam holes on 2 3/8" mtg /c).	Transmitter dynamotor input filter	Sprague part P13020;; Aerovox type 230M-1	55907
C-402	3DA850-2 — —	CAPACITOR, fixed: paper; 850,000 mmf +30%—10%; 600 vdcw; 1 15/32" max h x 1 19/32" diam; (metal case; hermetically sealed; mineral oil impregnation; 1 terminal on top; 3 mtg feet with #6-32 tapped holes; 120° spacing on 1/2" rad).	Transmitter dynamotor output filter	Sprague part P4481; Aerovox Special	55850
C-403	3DB-154 — —	CAPACITOR, fixed: electrolytic; 8 mf +40%—10%; 500 vdcw; 2" lg x 1 3/4" wd x 1 1/16" max thk; (metal case; hermetically sealed; filled with potting compound; 2 terminals; 2 mtg lugs with 3/16" diam holes on 2 3/8" mtg /c).	Transmitter Dynamotor output filter	Aerovox type LBT-EN-500V; Mallory part 95191; Sprague part D5836	55844
C-404	3DB25-60 — —	CAPACITOR, fixed: electrolytic; 25 mf +40%—10%; 300 vdcw; 3 13/16" max lg x 1 3/8" diam; (metal case; hermetically sealed; filled with potting compound; 2 terminals on one end).	Receiver Dynamotor output filter	Aerovox type LE-EP-300v; Mallory part 95192; Sprague D5834	55910
C-405	3DA250-207 — —	CAPACITOR, fixed: paper; 250,000 mmf +20%—10%; 400 vdcw; 1 7/8" lg x 3/4" diam; (metal case; hermetically sealed; mineral oil impregnation; 1 terminal on top; 1 mtg hole 5/32" diam).	Receiver dynamotor output filter	Sprague part P11266; Aerovox type 489MGY-.25	55908
C-406		CAPACITOR, fixed: same as C-405.	Receiver dynamotor input filter		55908
C-407		CAPACITOR, fixed: same as C-402.	Receiver dynamotor input filter		55850

*Not available as a spare part; listed for reference only.

TABLE OF PARTS—Continued
MODEL: RADIO TEST SET AN/ARM-1 **MAJOR ASSEMBLY: POWER JUNCTION BOX J-68/ARC-3**

Reference Symbol	Army Stock No. Navy Stock No. British Ref. No.	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Cont. or Govt. Dwg. or Spec. No.
D-401		DYNAMOTOR UNIT DY-21/ARC-3; transmitter plate supply; output 410 v d-c, 325 ma; input 27 v d-c, 7.4 amp; 8500 rpm; $(7 \frac{5}{16} \times 3 \frac{15}{32} \times 3 \frac{15}{16})$ h overall; aluminum mtg plate: 4 mtg holes, .353" diam with snap slide locks on $5 \frac{3}{4} \times 2 \frac{1}{2}$ mtg /c; 3 pin socket).	Transmitter high voltage supply	Electrolux part 24550-1 Wemco part 1171368-1	55885-1
D-402		DYNAMOTOR UNIT DY-22/ARC-3; receiver plate supply; output 210 v d-c, 125 ma; input 28 v d-c 1.94 amp; 8500 rpm; $(6 \frac{17}{32} \times 3 \frac{15}{32} \times 3 \frac{15}{16})$ h overall; aluminum mtg plate; 3 mtg holes, .353" diam with snap slide locks on $2 \frac{5}{8} \times 5 \frac{35}{32}$ mtg /c; 3 pin socket).	Receiver high voltage supply	Webster Prod part 35X053 Electrolux part 24600-1	55883-1
E-401	3Z2880-7.1 — —	HOLDER, fuse: block type; for two $1 \frac{1}{4} \times \frac{1}{4}$ diam cartridge fuses; $\frac{3}{32}$ " bakelite base with phosphor bronze clips; $3 \frac{7}{32} \times \frac{23}{32} \times \frac{23}{32}$ wd x $\frac{9}{16}$ h overall; (marked " $\frac{1}{2}$ A", "250 V", "REC" and "SPARE"; 2 mtg holes .128" diam on $1 \frac{3}{4}$ mtg /c; 2 solder lug terminals).	Mounts receiver fuse	Colonial Rad	55876-1
E-402	3Z2880-7 — —	HOLDER, fuse: block type; for two $1 \frac{1}{4} \times \frac{1}{4}$ diam cartridge fuses; $\frac{3}{32}$ " bakelite base with phosphor bronze clips; $3 \frac{7}{32} \times \frac{23}{32} \times \frac{23}{32}$ wd x $\frac{9}{16}$ h overall; (marked " $\frac{1}{2}$ A", "250 V", "TRANS" and "SPARE"; 2 mtg holes .128" diam on $1 \frac{3}{4}$ mtg /c; 2 solder lug terminals).	Mounts transmitter fuse	Colonial Rad	55877-1
E-403	3H525-74 — —	BRUSH, electrical contact: carbon; 30 v d-c, 7.5 amp; $\frac{5}{16} \times \frac{9}{16}$ sq x $\frac{9}{16}$ lg; (terminal connected to brush with flexible copper wire and spring $1 \frac{1}{8}$ lg).	Transmitter dynamotor low voltage brush	Wemco	55994-1
E-404		BRUSH, electrical contact: same as E-403.	Transmitter dynamotor low voltage brush		55994-1
E-405	3H525-75 — —	BRUSH, electrical contact: carbon; 500 v d-c, 350 ma; $\frac{1}{4} \times \frac{1}{4}$ sq x $\frac{1}{2}$ lg; (terminal connected to brush with flexible copper wire and spring $1 \frac{1}{8}$ lg).	Transmitter dynamotor high voltage brush	Wemco	55994-2
E-406		BRUSH, electrical contact: same as E-405.	Transmitter dynamotor high voltage brush		55994-2
E-407		BRUSH, electrical contact: same as E-403.	Receiver dynamotor low voltage brush		55994-1
E-408		BRUSH, electrical contact: same as E-403.	Receiver dynamotor low voltage brush		55994-1

AN 16-30ARM1-2

E-409		BRUSH, electrical contact: same as E-405.	Receiver dynamotor high voltage brush	55994-2
E-410		BRUSH, electrical contact: same as E-405.	Receiver dynamotor high voltage brush	55994-2
E-411		INSULATOR, washer: moulded black bakelite; wax impregnation; $\frac{3}{8}$ " O.D. x $\frac{1}{8}$ " thick.	Insulates R-401	55636
E-412		INSULATOR, washer: same as E-411.	Insulates R-401	55636
F-401	3Z2595.6	FUSE, cartridge: $\frac{3}{8}$ amp, 250 v; one-time; glass body; ferrule ends $\frac{1}{4}$ " diam x $\frac{1}{4}$ " lg; overall dimen 1" lg x $\frac{1}{4}$ " diam.	Transmitter high voltage fuse	55924
F-402		FUSE, cartridge: same as F-401.	Receiver high voltage fuse	55924
H-401	3Z1721-1	COVER, fuse: aluminum, clear anodized; $3\frac{5}{16}$ " lg x $\frac{9}{16}$ " wd x $1\frac{1}{16}$ " h; (one mtg hole .226" dia with snapside lock).	Transmitter fuse cover	55880-1
H-402		COVER, fuse: same as H-401.	Receiver fuse cover	55880-1
K-401	2Z7585-112	RELAY, general purpose: SPST, two contacts in series, normally open; $1\frac{1}{2}$ " lg x $1\frac{1}{8}$ " wd x $1\frac{1}{32}$ " h overall; ($\frac{1}{4}$ " silver contacts; contact rating 28 v d-c, 10 amp; single wound coil, 14 v d-c 56 ma, 250 ohms; two mtg holes tapped #4-40 on $\frac{5}{64}$ " mtg /c).	Heater and receiver dynamotor on-off	55837
K-402		RELAY, general purpose: same as K-401.	Transmitter dynamotor on-off	55837
K-403	2Z7585-113	RELAY, general purpose: SPST, normally open; $1\frac{1}{16}$ " lg x $\frac{25}{32}$ " wd x $1\frac{5}{16}$ " h overall; (16 gauge palladium contacts; contact rating 28 v d-c, 100 ma; single wound coil, 14 v d-c 50 ma, 280 ohms; special high voltage insulation; 2 mtg holes tapped #4-40 on $\frac{4}{64}$ " mtg /c).	Transmitter control tube time delay	55251
K-404	2Z7591-34	RELAY, general purpose: 3A; $1\frac{1}{16}$ " lg x $\frac{25}{32}$ " wd x $1\frac{1}{2}$ " h overall; (16 gauge palladium contacts; contact rating 28 v d-c, 100 ma; single wound coil, 14 v d-c, 50 ma, 280 ohms; 2 mtg holes tapped #4-40 on $\frac{4}{64}$ " mtg /c).	Control tube heaters time delay	55252
K-405		RELAY, general purpose: same as K-403.	Receiver control tube time delay	55251
K-406	2Z7585-111	RELAY, changeover: SPDT: $1\frac{1}{16}$ " lg x $\frac{25}{32}$ " wd x $1\frac{15}{32}$ " h overall; (16 gauge palladium contacts; contact rating 28 v d-c, 100 ma, single wound coil, 14 v d-c, 50 ma, 280 ohms; 2 mtg holes tapped #4-40 on $\frac{4}{64}$ " mtg /c).	Switches headsets	55836

*Not available as a spare part; listed for reference only.

TABLE OF PARTS—Continued
MODEL: RADIO TEST SET AN/ARM-1 **MAJOR ASSEMBLY: POWER JUNCTION BOX J-68/ARC-3**

Reference Symbol	Army Stock No. Navy Stock No. British Ref. No.	Name of Part and Description	Function	Mft. and Desig. or Standard Type	Cont. or Govt. Dwg. or Spec. No.
L-401	3C323-129K — —	COIL, radio, RF: choke; single winding four layer; unshielded; 56 turns #12 AWG wire; $1\frac{1}{32}$ " lg x $1\frac{1}{2}$ " diam; (bakelite form powdered iron core; through mounting hole $\frac{5}{16}$ " diam; two loop terminals on top; varnish impregnation).	Transmitter dynamotor input choke	Colonial rad	55881-1
L-402	3C323-20J — —	COIL, radio, AF: filter; single winding; 550 mh; 325 ma, 45 ohms; $1\frac{1}{8}$ " diam x $2\frac{3}{8}$ " h; (2000 v RMS insulation test; aluminum can; 3 mtg holes, tapped #6-32 120 deg spacing on $\frac{1}{16}$ " rad; compound filled, hermetically sealed; 2 solder lug terminals on bottom).	Transmitter dynamotor output choke	Acme Elec part T7698 Role Dinon Coil	55840
L-403	3C323-20K — —	COIL, radio, AF: filter; single winding; 1 hy; 125 ma, 78 ohms; $1\frac{1}{2}$ " diam x $1\frac{1}{32}$ " h; (1500 v RMS insulation test; aluminum can; 3 mtg holes tapped #6-32, 120 deg spacing on $\frac{1}{32}$ " rad; compound filled, hermetically sealed; 2 solder lug terminals on bottom).	Receiver dynamotor output filter	Acme Elec part T7699 Rola Dinon Coil	55841
L-404	3C323-129E — —	COIL, radio, RF: choke; single winding, four layer; unshielded; 80 turns #18 AWG wire; $\frac{15}{32}$ " lg x $1\frac{1}{16}$ " diam; (bakelite form, powdered iron core; through mtg hole $\frac{5}{32}$ " diam; 2 solder lug terminals on top; varnish impregnation).	Receiver dynamotor input choke	Colonial rad	55882-1
O-401	3H683-9 — —	CAP, contact brush; molded bakelite; $\frac{5}{8}$ " diam x $.318$ " h; (metal insert threaded $\frac{1}{16}$ " -32 for mtg; straight knurl).	Transmitter dynamotor, low voltage brush cap	Wemco	55891-1
O-402	— —	CAP, contact brush: same as O-401.	Transmitter dynamotor low voltage cap	—	55891-1
O-403	3H683-10 — —	CAP, contact brush; molded bakelite; $\frac{9}{16}$ " diam x $.318$ " h; (metal insert, threaded $\frac{3}{8}$ " -32 for mtg; straight knurl).	Transmitter dynamotor high voltage brush cap	Wemco	55891-2
O-404	— —	CAP, contact brush: same as O-403.	Transmitter dynamotor high voltage cap	—	55891-2
O-405	— —	CAP, contact brush: same as O-401.	Receiver dynamotor low voltage brush cap	—	55891-1
O-406	— —	CAP, contact brush: same as O-401.	Receiver dynamotor low voltage cap	—	55891-1
O-407	— —	CAP, contact brush: same as O-403.	Receiver dynamotor high voltage brush cap	—	55891-2
O-408	— —	CAP, contact brush: same as O-403.	Receiver dynamotor high voltage cap	Standard	55891-2

P-401	2Z8800-40	CONNECTOR, male contact; 3 banana type contacts; $1\frac{1}{8}$ " diam x $\frac{25}{32}$ " lg; (cylindrical aluminum body; moulded black bakelite insert; $1\frac{1}{8}$ "-24 thread for mtg; $\frac{15}{32}$ " lg; supplied with mtg nut).	Battery connection	Colonial Rad	55915-1
P-402	2Z8800-4	CONNECTOR, male contact; 16 banana type contacts; $1\frac{1}{8}$ " diam x $\frac{45}{64}$ " h overall; (cylindrical aluminum body; moulded black bakelite insert; $1\frac{1}{8}$ "-24 thread for mtg; supplied with mtg nut).	Transmitter connection	Colonial Rad	55494-1
P-403	2Z3044-3	CONNECTOR, male contact; 24 round male contacts; $1\frac{3}{4}$ " sq x $1\frac{11}{32}$ " thick, less contacts; AN3102-24-28p; (cylindrical aluminum body; 4 mtg holes, .147" diam on $1\frac{3}{8}$ " x $1\frac{3}{8}$ " mtg/c, bushing threaded $1\frac{1}{2}$ "-#18).	Control box connector	Amphenol, Cannon Elec	55918
P-404	2Z7226-153A	CONNECTOR, male contact; 18 banana type contacts; $1\frac{13}{16}$ " diam x $\frac{45}{64}$ " h overall; (cylindrical aluminum body; moulded black bakelite insert; $1\frac{5}{8}$ "-24 thread for mtg; supplied with mtg nut).	Receiver connection	Colonial Rad	55916-1
P-405	*	CONNECTOR, male contact; 3 banana type contacts; $1\frac{5}{16}$ " diam x $\frac{15}{64}$ " thk, less contacts; (aluminum mtg ring; mica insert).	Transmitter dynamotor connection	Colonial Rad	55913-1
P-406	*	CONNECTOR, male contact; same as P-405.	Receiver dynamotor connection	Colonial Rad	55913-1
R-401		RESISTOR, fixed: wire wound; 100 ohms $\pm 5\%$; 5 watts; $1\frac{1}{8}$ " lg x $\frac{5}{16}$ " diam; (vitreous enamel insulation; ceramic core; 2 terminals $\frac{15}{32}$ " lg).	Time delay relay shunt	WL, type 1Z, Utahrad part X-1385	55653-4
R-402		RESISTOR, fixed: composition; 680 ohms, $\pm 5\%$; 1 watt; .718" max lg x .280" max diam; (bakelite insulation; 2 axial wire leads, $1\frac{1}{2}$ " lg).	Time delay relay shunt	AWS RC30AF 681J	56559

MAJOR ASSEMBLY: CONTROL BOX C-118 / ARC-3

501-series	2C684-118	CONTROL BOX C-118/ARC-3: aluminum; black enamel 7" lg x $2\frac{5}{8}$ " wd x 6" h overall; (8 red buttons, marked "A-B-C-D-E-F-G-H", and one black button marked "OFF", 3 jacks marked "TEL" and "MIC", and connector marked "U-16/U"; reversible mtg bracket, 2 holes .353" diam with snapslide locks on $3\frac{1}{8}$ " mtg/c).	Secures control box to mount	Colonial Rad	56218
A-501	*	BRACKET, mounting: "L" shape: aluminum; $4\frac{7}{8}$ " lg x $\frac{13}{16}$ " wd x $1\frac{1}{32}$ " h; (2 holes .353" diam with snapslide locks for mtg on $3\frac{1}{8}$ " mtg /c).	Channel "A" push button	Trico part F4378-1	56201-1
E-501	2Z1480.24	BUTTON, push: aluminum, red anodized: $\frac{3}{4}$ " diam x $\frac{11}{16}$ " lg; (marked "A" in fluorescent green lacquer; 1 set screw #6-32 for mtg).	Channel "B" push button	Trico part F4378-2	56201-2
E-502	2Z1480.29	BUTTON, push: aluminum, red anodized: $\frac{3}{4}$ " diam x $1\frac{1}{16}$ " lg; (marked "B" in fluorescent green lacquer; 1 set screw #6-32 for mtg).	Channel "C" push button	Trico part F4378-3	56201-3
E-503	2Z1480.26	BUTTON, push: aluminum, red anodized: $\frac{3}{4}$ " diam x $\frac{11}{16}$ " lg; (marked "C" in fluorescent green lacquer; 1 set screw #6-32 for mtg).	Channel "D" push button	Trico part F4378-4	56201-4
E-504	2Z1480.25	BUTTON, push: aluminum, red anodized: $\frac{3}{4}$ " diam x $\frac{11}{16}$ " lg; (marked "D" in fluorescent green lacquer; 1 set screw #6-32 for mtg).			

*Not available as a spare part; listed for reference only.

TABLE OF PARTS—Continued
MODEL: RADIO TEST SET AN/ARM-1 **MAJOR ASSEMBLY: CONTROL BOX C-118/ARC-3**

Reference Symbol	Army Stock No. Navy Stock No. British Ref. No.	Name of Part and Description	Function	Mfg. and Desig. or Standard Type	Cont. or Govt. Dwg. or Spec. No.
E-505	2Z1480.23	BUTTON, push: aluminum, red anodized; $\frac{3}{4}$ " diam x $1\frac{1}{16}$ " lg; (marked "E" in fluorescent green lacquer; 1 set screw #6-32 for mtg).	Channel "E" push button	Trico part F4378-5	56201-5
E-506	2Z1480.25	BUTTON, push: aluminum, red anodized; $\frac{3}{4}$ " diam x $1\frac{1}{16}$ " lg; (marked "F" in fluorescent green lacquer; 1 set screw #6-32 for mtg).	Channel "F" push button	Trico part F4378-6	56201-6
E-507	2Z1480.27	BUTTON, push: aluminum, red anodized; $\frac{3}{4}$ " diam x $1\frac{1}{16}$ " lg; (marked "G" in fluorescent green lacquer; 1 set screw #6-32 for mtg).	Channel "G" push button	Trico part F4378-7	56201-7
E-508	2Z1480.28	BUTTON, push: aluminum, red anodized; $\frac{3}{4}$ " diam x $1\frac{1}{16}$ " lg; (marked "H" in fluorescent green lacquer; 1 set screw #6-32 for mtg.)	Channel "H" push button	Trico part F4378-8	56201-8
E-509	2Z1480.30	BUTTON, push: aluminum, black anodized: $\frac{3}{4}$ " diam x $1\frac{1}{16}$ " lg; (marked "OFF" in white lacquer; 1 set screw #6-32 for mtg).	On-off button	Trico part F4378-9	56201-9
E-510	2Z9403.163	BOARD, terminal: 3 brass cadmium-plated terminals; molded bakelite; $2\frac{3}{8}$ " lg x $\frac{3}{8}$ " wd x $\frac{3}{32}$ " thk; (2 metal inserts tapped #4-40 for mtg. on $1\frac{1}{8}$ " mtg /c).	Mounts resistor R-501	Colonial Rad	55980-1
J-501	2Z5543	JACK, telephone: Sig C Jack JK-43; for 3 conductor plug .208" diam; $\frac{3}{4}$ " diam x $\frac{1}{8}$ " lg; (J2 contact arrangement; $\frac{3}{8}$ "-32 threaded bushing for mtg).	Microphone connection	Utahrad part ST-1086	56202
J-502	2Z5534	JACK, telephone: Sig C Jack JK-34A; for 2 conductor plug .250" diam; $\frac{3}{4}$ " diam x 1.287" lg; (J1 contact arrangement; $\frac{3}{8}$ "-32 threaded bushing for mtg).	Headset connection	National Fabricated	56203
P-501	2Z3044-3	CONNECTOR, male contact; 24 round male contacts; $1\frac{3}{4}$ " sq x $1\frac{1}{32}$ " thk; less contacts; AN3102-24-28p; (cylindrical aluminum body; 4 mtg holes, .147" diam on $1\frac{3}{8}$ " x $1\frac{3}{8}$ " mtg /c; bushing threaded $1\frac{1}{2}$ "-#18).	Power junction box connector	Amphenol, Cannon Elec	55918
R-501	3RC20BF271J	RESISTOR, fixed: composition; 270 ohms $\pm 5\%$; $\frac{1}{2}$ " w; .468" max lg x .249" max diam; (bakelite insulation; 2 axial wire leads; $1\frac{1}{4}$ " lg.	Headset attenuator	AWS RC20AF271J	56524
R-502	3RC30BF102K	RESISTOR, fixed: composition; 1000 ohms $\pm 10\%$; 1 w; .718" max lg x .280" max diam; (bakelite insulation; 2 axial wire leads; $1\frac{1}{4}$ " lg.	Headset attenuator	AWS RC30AF102K	56518
S-501	3Z9824-83.1	SWITCH, push: 9 sections; SPST; bakelite body, $5\frac{3}{4}$ " lg x $1\frac{3}{4}$ " wd x $1\frac{15}{16}$ " h, overall; (interlocking, 8 poles normally open, 1 pole normally closed; 4 mtg holes, tapped #6-32; horizontal mtg /c $4\frac{31}{32}$ " and $3\frac{31}{32}$ " vertical mtg /c .866"; 28 solder lug terminals).		Oak part 6350	56200

S-501A	*	SWITCH, push: part of S-501; marked "A".	Channel "A" selector	56200
S-501B	*	SWITCH, push: part of S-501; marked "B".	Channel "B" selector	56200
S-510C	*	SWITCH, push: part of S-501; marked "C".	Channel "C" selector	56200
S-501D	*	SWITCH, push: part of S-501; marked "D".	Channel "D" selector	56200
S-501E	*	SWITCH, push: part of S-501; marked "E".	Channel "E" selector	56200
S-501F	*	SWITCH, push: part of S-501; marked "F".	Channel "F" selector	56200
S-501G	*	SWITCH, push: part of S-501; marked "G".	Channel "G" selector	56200
S-501H	*	SWITCH, push: part of S-501; marked "H".	Channel "H" selector	56200
S-501J	*	SWITCH, push: part of S-501; marked "J"; normally closed.	On-off switch	56200
S-502	3Z9824-83 — —	SWITCH, push: SPST; single section; bakelite body; $1\frac{5}{16}$ " lg x $\frac{3}{4}$ " diam overall; 2 amp, 32 v d-c; (momentary, normally open; $\frac{3}{8}$ "-32 threaded bushing $\frac{3}{8}$ " lg for mtg; 2 solder lug terminals).	"TONE" switch Stackpole type C.T	55319

*Not available as a spare part; listed for reference only.

SECTION VII
DRAWINGS

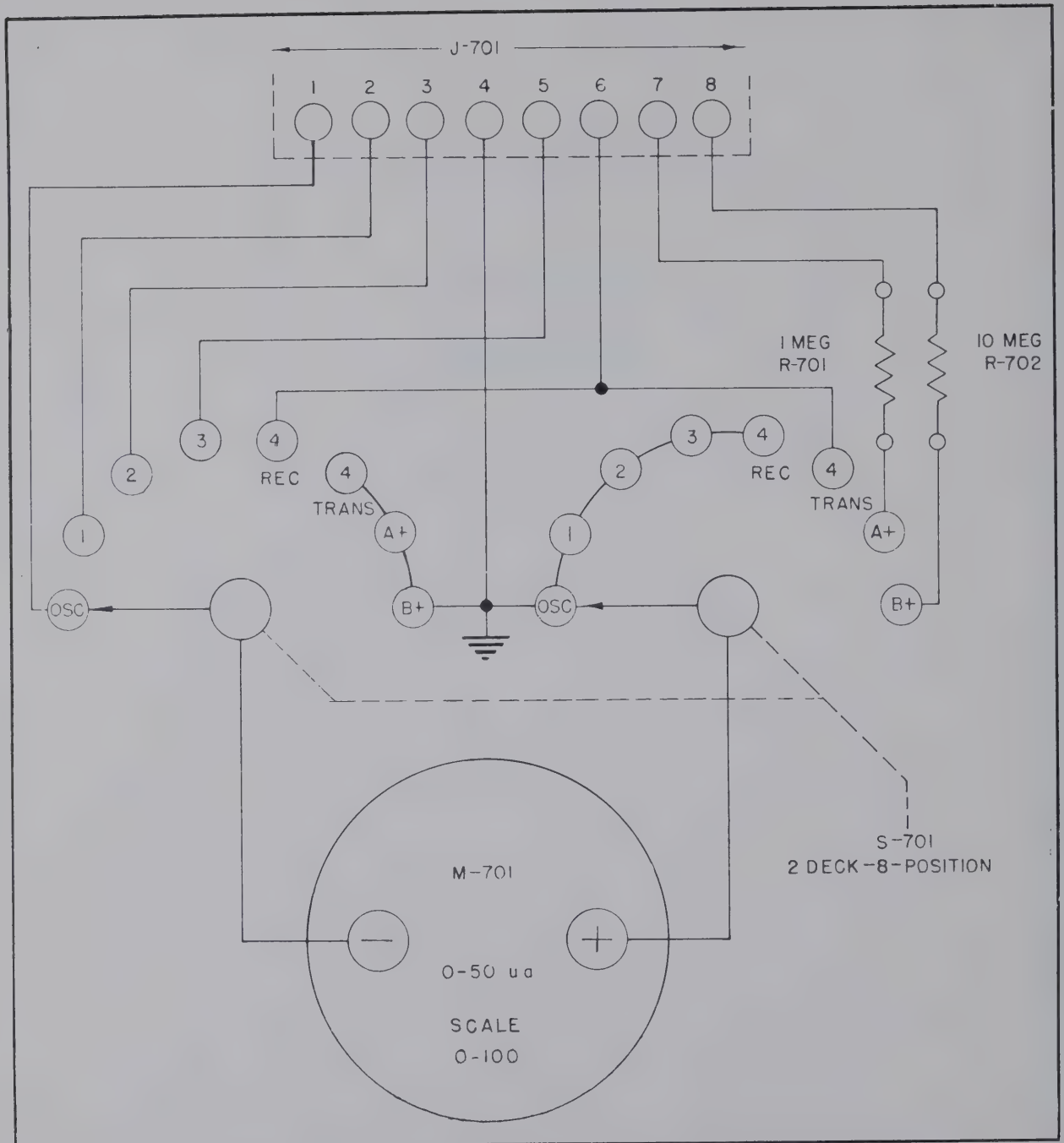


Figure 7-1. Test Unit TS-178/ARM-1 — Schematic Diagram

AN 16-30ARM1-2

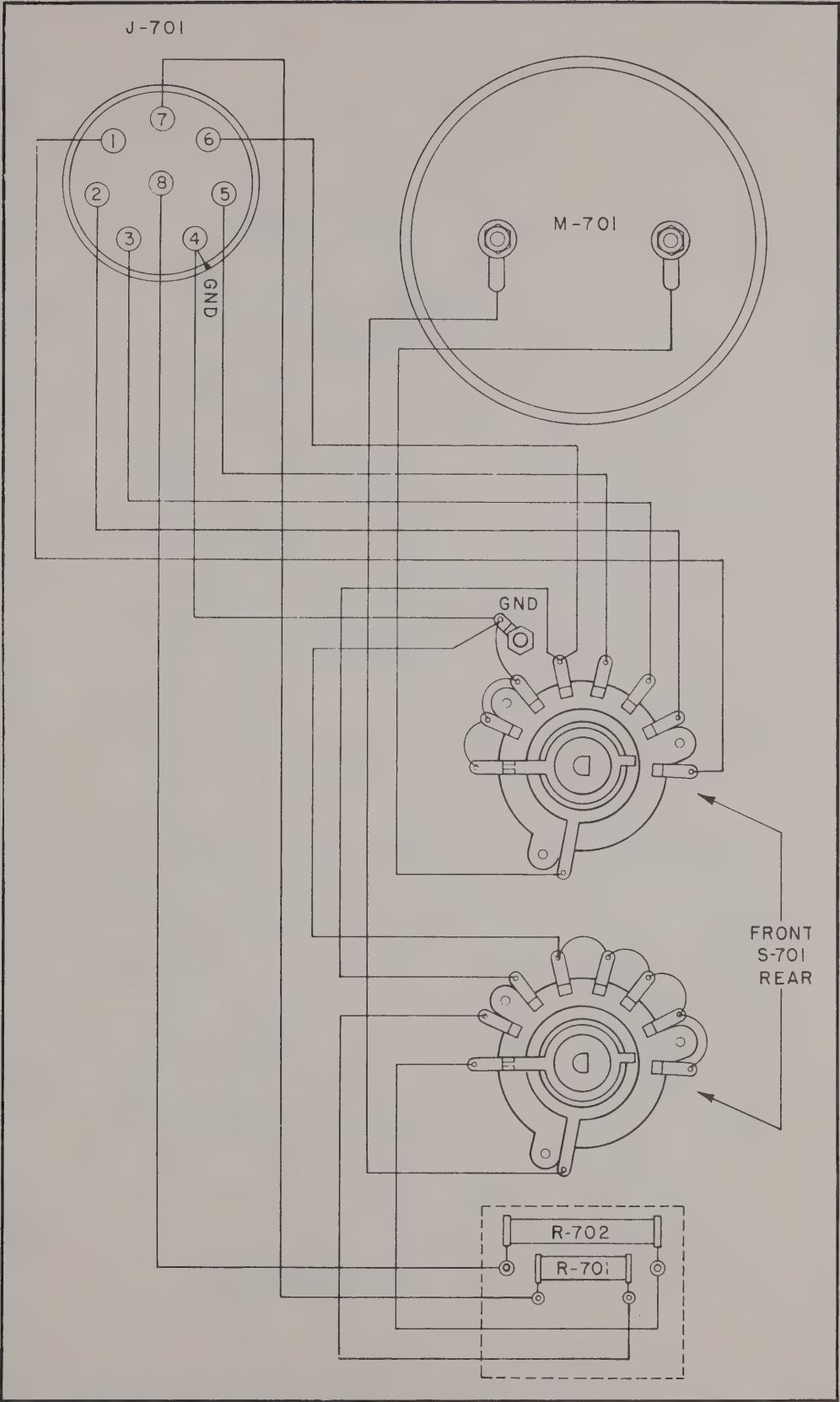


Figure 7-2. Test Unit TS-178/ARM-1 — Wiring Diagram

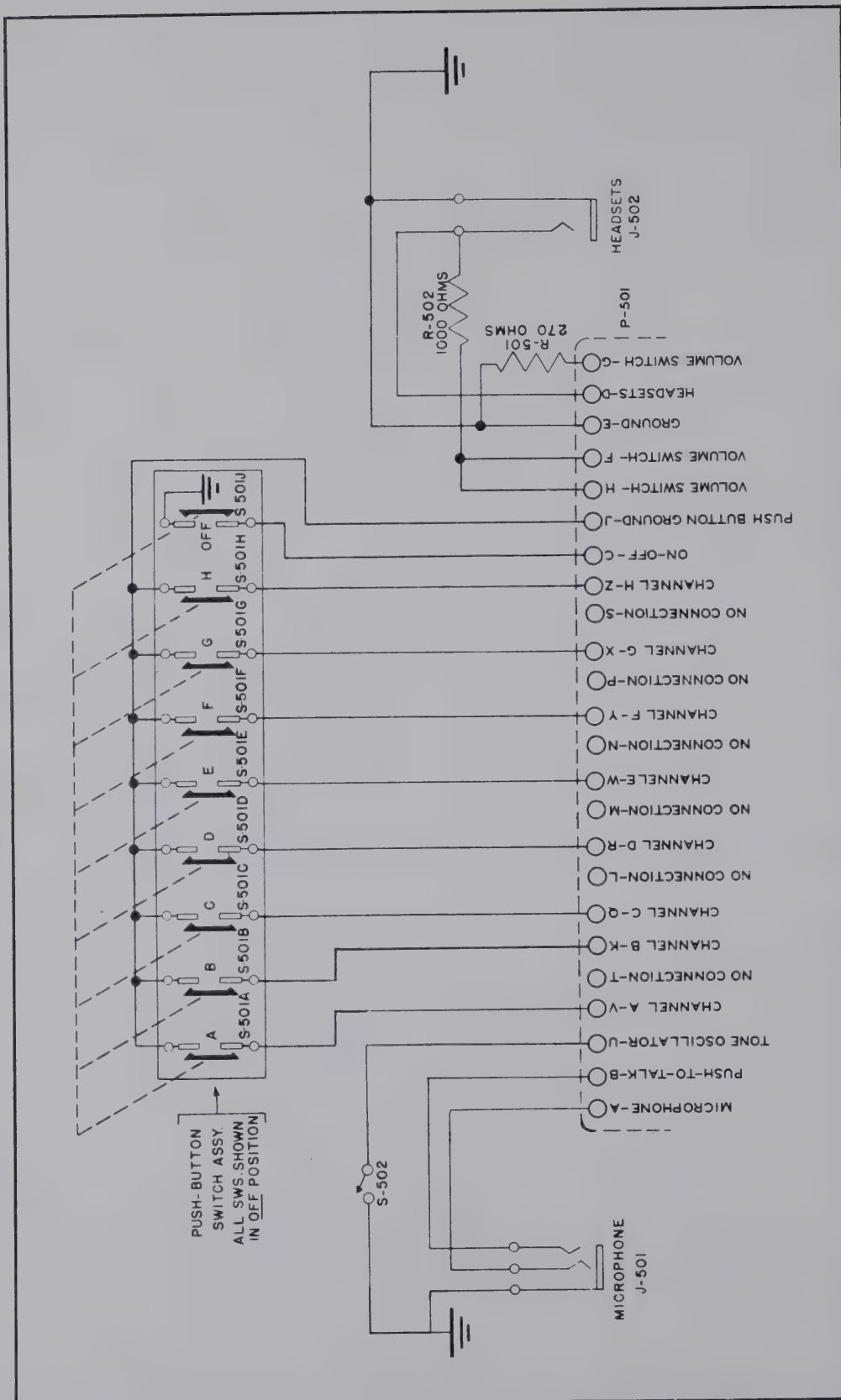


Figure 7-3. Control Box C-118/ARC-3 — Schematic Diagram

AN 16-30ARM1-2

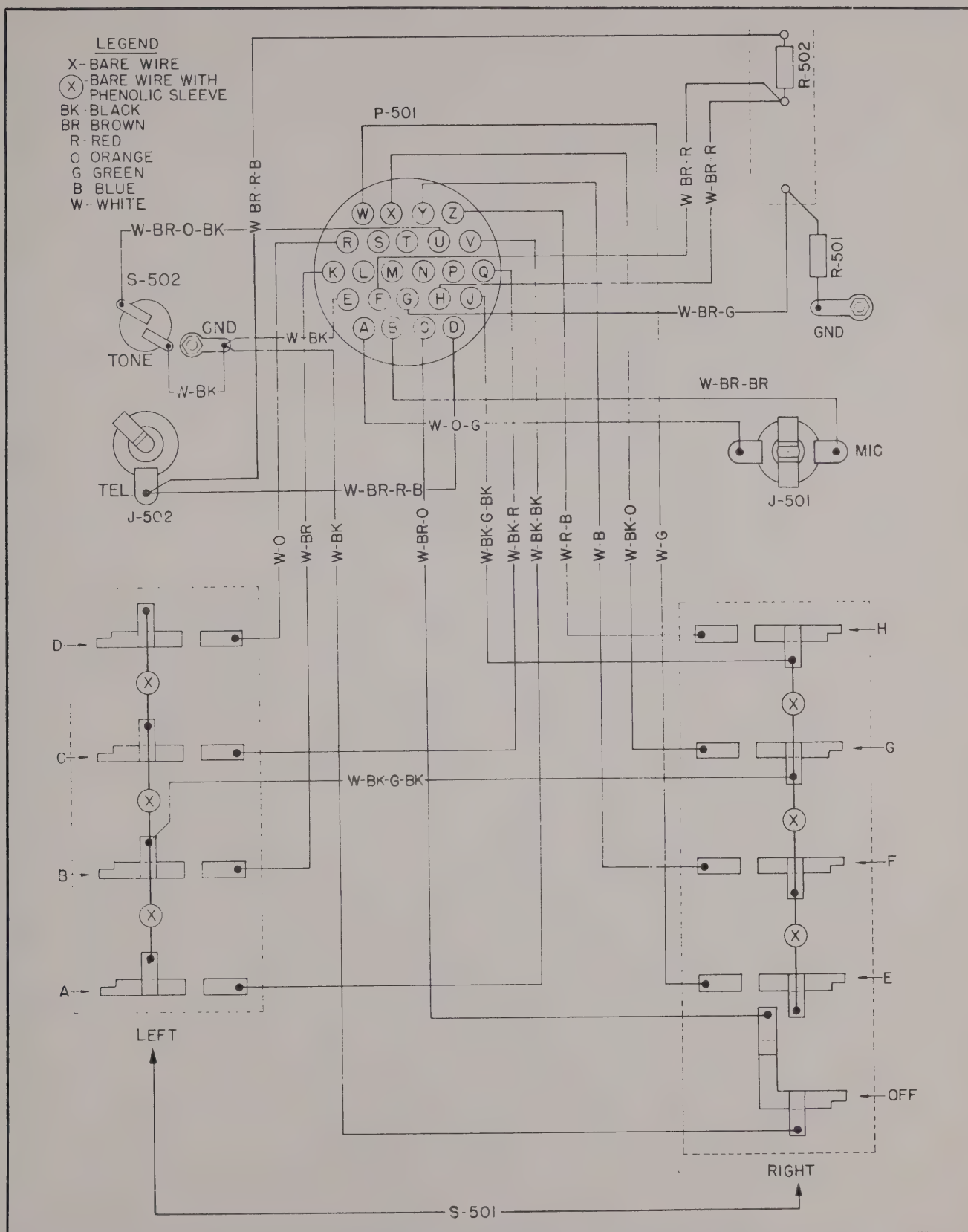


Figure 7-4. Control Box C-118/ARC-3 — Wiring Diagram

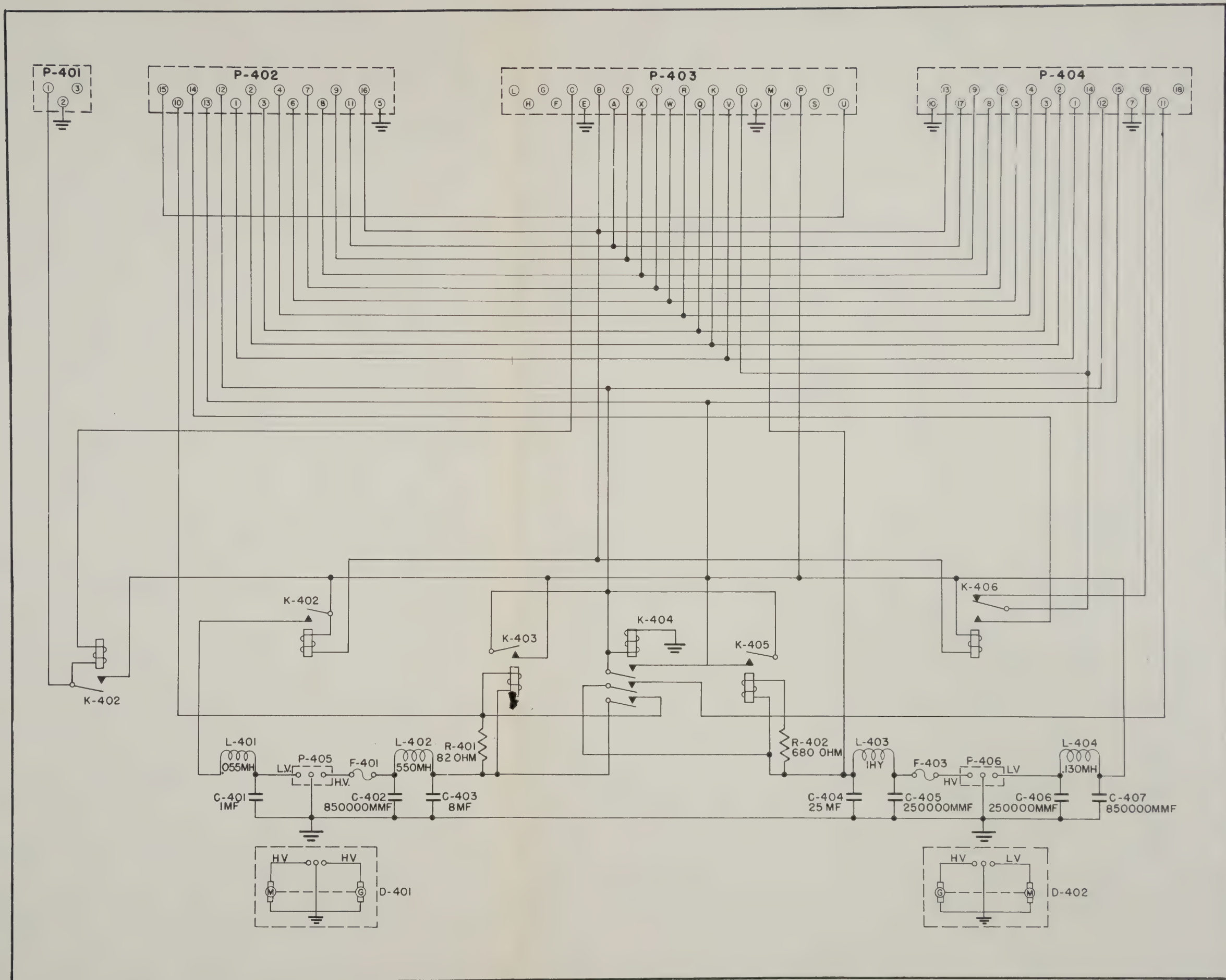


Figure 7-5. Power Junction Box J-68 / ARC-3 — Schematic Diagram

★

T.O. 33A1-3-3-12

**HANDBOOK
SERVICE INSTRUCTIONS**

RADIO TEST SET AN/ARM-1

(TAFLET RADIO AND TELEVISION CO.)

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

Reproduction for non-military use of the information or illustrations contained in this publication is not permitted without specific approval of the issuing service (BuAer or USAF). The policy for use of Classified Publications is established for the Air Force in AFR 205-1 and for the Navy in Navy Regulations, Article 1509.

LIST OF REVISED PAGES ISSUED

INSERT LATEST REVISED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the current revision is indicated by a vertical line in the outer margins of the page.

* The asterisk indicates pages revised, added or deleted by the current revision.

ADDITIONAL COPIES OF THIS PUBLICATION MAY BE OBTAINED AS FOLLOWS:

USAF ACTIVITIES.—In accordance with Technical Order No. 00-5-2.

NAVAL ACTIVITIES.—Use Publications and Forms Order Blank (NavAer 2126) and submit to the nearest publications supply point listed below: NAS, Alameda, Calif.; NAS, Jacksonville, Fla.; NAS, Norfolk, Va.; NAS, San Diego, Calif.; NAS, Seattle, Wash.; NASD, ASO, Guam; NASD, Philadelphia, Pa.

For listing of available publications see Naval Aeronautic Publications Index (NavAer 00-500).

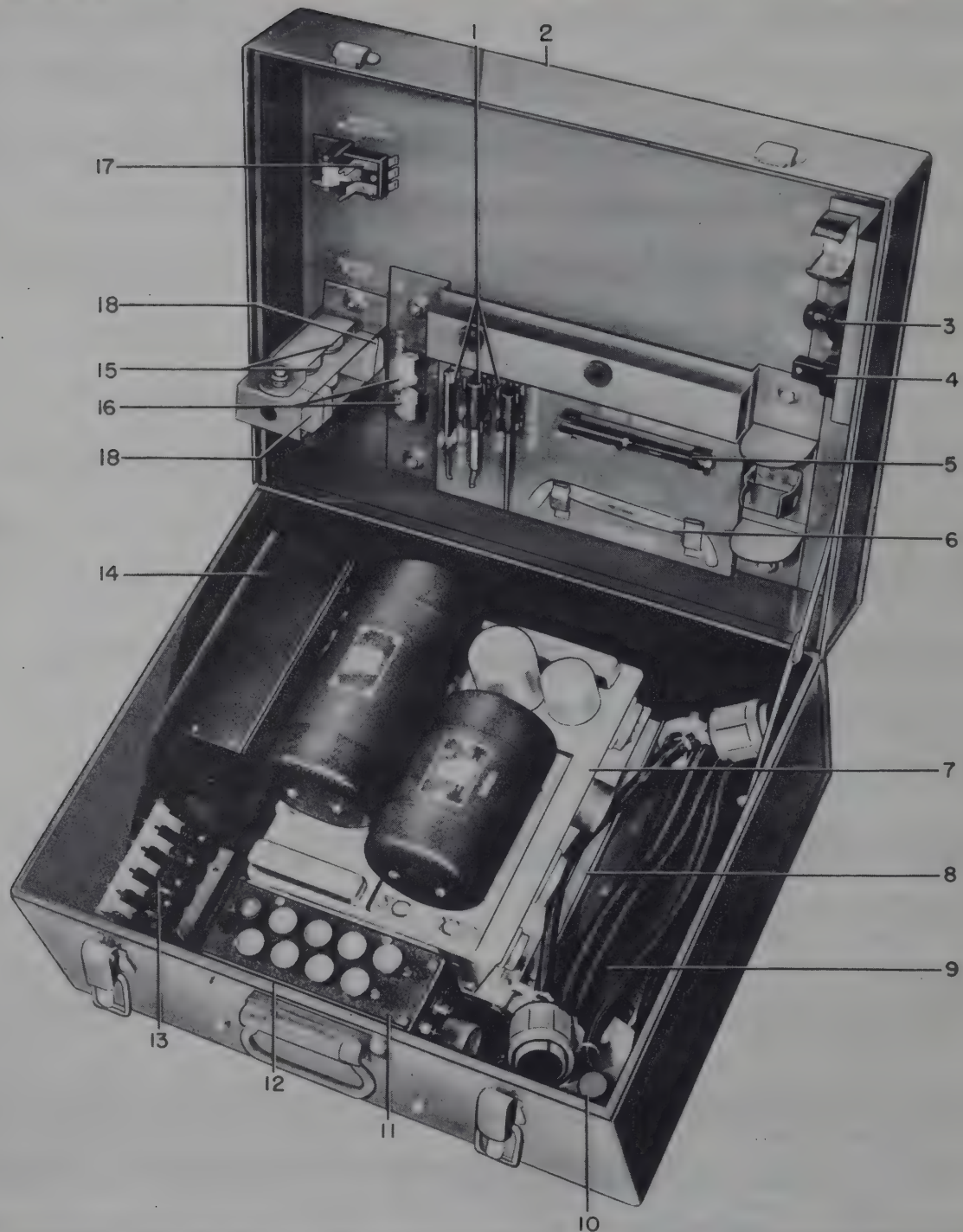
USAF

TABLE OF CONTENTS

Section		Page
	INTRODUCTION	1
I	DESCRIPTION AND LEADING PARTICULARS	1
	1-1. Introduction	1
	1-5. Basic Operation	1
	1-6. Description of Units.	1
	1-22. Equipment Supplied	3
	1-23. Leading Particulars.	3
	1-29. Operating Controls	6
II	TEST EQUIPMENT AND SPECIAL TOOLS.	6
III	PREPARATION FOR USE AND RESHIPMENT	7
	3-1. Preparation for Use.	7
	3-4. Reshipment	7
IV	THEORY OF OPERATION	7
	4-1. General	7
	4-3. Detailed Operation	7
V	ORGANIZATIONAL MAINTENANCE.	9
	5-1. General	9
	5-3. Inspection Schedule	9
	5-5. Minor Repairs	9
	5-8. Lubrication	10
VI	FIELD MAINTENANCE	11
	6-1. General	11
	6-3. Trouble Analysis	11
	6-5. Detailed Trouble Shooting	11
	6-7. Cleaning Dynamotor Commutators	12
VII	DIAGRAMS.	16

LIST OF ILLUSTRATIONS

Figure		Page
1-1.	Radio Test Set AN/ARM-1, Interior View	ii
1-2.	Power Junction Box J-68/ARC-3 on Mounting Base.	2
	MT-236/ARC-3	
1-3.	Control Box C-118/ARC-3.	3
1-4.	Test Unit TS-178/ARM-1	5
5-1.	Dynamotor Unit DY-21/ARC-3 With End Cover Removed	10
6-1.	Power Junction Box, Bottom View	11
6-2.	Control Box, Bottom View.	12
6-3.	Test Unit, Bottom View	13
7-1.	Power Junction Box J-68/ARC-3, Schematic Diagram	17
7-2.	Control Box C-118/ARC-3, Schematic Diagram	18
7-3.	Test Unit TS-178/ARM-1, Schematic Diagram	19



- | | |
|----------------------------------|---------------------------------|
| 1. Relay maintenance tools | 10. Alignment Tool MX-174/ARM-1 |
| 2. Chest CY-146/ARM-1 | 11. Control Box C-118/ARC-3 |
| 3. Shorting Plug U-30/ARM-1 | 12. Mounting FT-240A |
| 4. Shunting Unit MX-294/ARM-1 | 13. Crystal Units CR-1A/AR |
| 5. Relay contact burnisher | 14. Test Unit TS-178/ARM-1 |
| 6. Tuning Wand MX-173/ARM-1 | 15. Adapters PL-272 |
| 7. Power Junction Box J-68/ARC-3 | 16. Caps MX-506/ARM-1 |
| 8. Mounting Base MT-236B/ARC-3 | 17. Adapter MX-293/ARM-1 |
| 9. Interconnection cords | 18. Fuses (spare) |

Figure 1-1. Radio Test Set AN/ARM-1, Interior View

INTRODUCTION

This handbook is intended for the use of the technician concerned with the maintenance of the Radio Test Set AN/ARM-1. This handbook contains information on theory, and organizational and field maintenance of the test set as provided in Military Specification MIL-H-6757A(ASG), 6 March 1953.

SECTION I

DESCRIPTION AND LEADING PARTICULARS

1-1. GENERAL.

1-2. SCOPE. This handbook comprises service instructions for the Radio Test Set AN/ARM-1 (figure 1-1). The equipment is manufactured by Taffet Radio and Television Company, New York City, New York.

1-3. Sections I through VII of this handbook apply to the Radio Test Set AN/ARM-1. Since no additional models are available, Section VIII "Difference Data Sheets" is "Not Applicable".

1-4. PURPOSE. The test set is designed for use in the alignment, testing and maintenance of the Radio Set AN/ARC-3. The test set is portable but is not designed for operation during flight.

1-5. BASIC OPERATION. The radio test set consists of a power distribution circuit, a switching circuit, and a multimeter arrangement. It is designed to test the following characteristics of the Radio Set AN/ARC-3:

- a. Power source voltage.
- b. B plus voltage.
- c. Grid current of the harmonic generator.
- d. Grid current of the oscillator.
- e. Grid current of the power amplifier.
- f. Grid current of the detector.
- g. Plate current of the power amplifier.

1-6. DESCRIPTION OF UNITS.

1-7. CHEST CY-146/ARM-1. The steel chest contains all the equipment of the radio test set. A folding type handle is located on the front of the chest (figure 1-1).

1-8. MOUNTING BASE MT-236B/ARC-3. The power junction box mounting base (figure 1-2) is fastened to the bottom of Chest CY-146/ARM-1. The mounting base is rectangular in shape and has a shock absorber mount and a snapslide stud in each corner. Two grounding straps are mounted on the base.

1-9. POWER JUNCTION BOX J-68/ARC-3 or J-68A/ARC-3. Fastened to the Mounting Base MT-236B/ARC-3 with four snapslides, is the power junction box as shown in figure 1-2. Located on the top surface of the junction box chassis are two dynamotors, four fuses, and two filter chokes. Four receptacles located on the front panel of the chassis are used to connect the junction box to the battery, transmitter, control box, and the receiver.

NOTE

Either Power Junction Box J-68/ARC-3 or Power Junction Box J-68A/ARC-3 may be supplied as part of the test set. The units are interchangeable. The only difference is that bayonet type fuseholders are used in J-68A/ARC-3 instead of the cartridge type fuseholders with covers used in J-68/ARC-3.

1-10. CONTROL BOX C-118/ARC-3. The front panel of the control box (figure 1-3) contains eight red push buttons lettered from A through H, a black push button lettered OFF, and a small unmarked button. The OFF button cannot be depressed unless it is simultaneously depressed with the unmarked push button. The letters on each push button are filled with a fluorescent material. A receptacle, two jacks, and a push button switch are located on the end of the control box. The jack marked TEL is for the headset connection, and the jack marked MIC is for the microphone connection. The receptacle marked U16/U is the power junction box connection. The switch marked TONE is not used in aligning Radio Set AN/ARC-3. It is used as a key during modulated continuous wave operation.

1-11. MOUNTING FT-240-A. The mounting (figure 1-3) is flat and has a rolled edge. The opposite end has two studs mounted on two extensions. The mounting is used as an anchorage for the control box.

1-12. TEST UNIT TS-178/ARM-1. The test unit (figure 1-4) contains a panel type meter, whose scale reads from 0 to 100. Directly below is an eight

position selector switch marked OSC, 1, 2, 3, 4 REC, 4 TRANS, A +, B +. Contained with the test unit is an interconnecting cable.

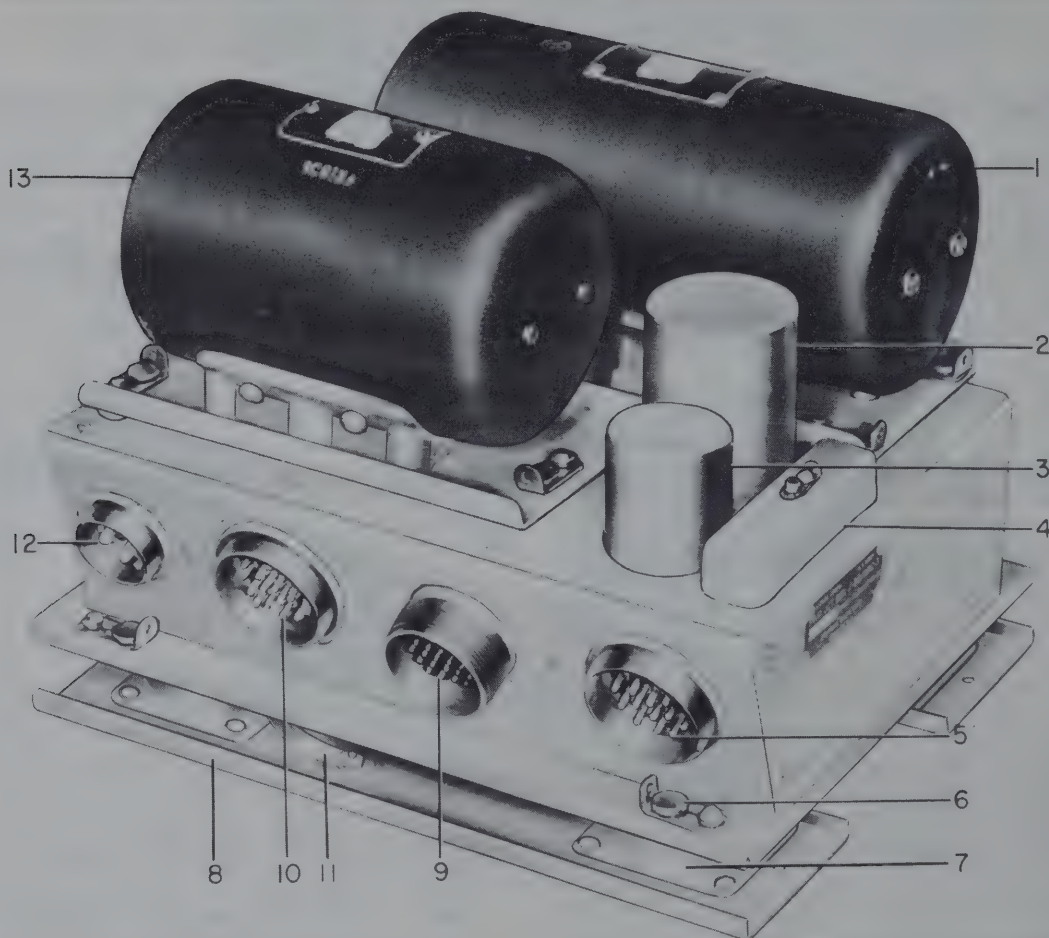
1-13. ADAPTER PL-272. The adapter connects the output of the Signal Generator I-96-A to the ANTENNA receptacle on the front panel of the Radio Receiver R-77/ARC-3.

1-14. ADAPTER MX-293/ARM-1. The adapter consists of contact clips mounted on an insulated base for the purpose of connecting a signal generator output to the grid of the first detector tube of Radio Receiver R-77/ARC-3. The clips are formed in such a manner so that when the adapter is installed on the four-gang variable capacitor frame of the radio receiver, contact is made with the grid pin of tube JAN-9001 (V209).

1-15. SHORTING PLUG U-30/ARM-1. The plug has a five prong base designed to replace relay K201 in the socket of the receiver during the alignment procedure. Pin No. 2 and Pin No. 4 of the plug are connected together, so that when it replaces the relay it shorts the contacts normally connected to the tuning relay.

1-16. SHUNTING UNIT MX-294/ARM-1. The shunting unit consists of a capacitor and a resistor housed in a bakelite plug. Attached are two clip connectors for connection to the i-f transformer terminals. The unit is used to prevent detuning effects during the alignment of the receiver i-f stages.

1-17. ALIGNMENT TOOL MX-174/ARM-1. The alignment tool is an insulated screwdriver which is



1. Dynamotor DY-21/ARC-3
2. Coil L402
3. Coil L403
4. Fuse cover
5. RECEIVER receptacle
6. Snapslide assembly
7. Shock mount

8. Mounting Base MT-236B/ARC-3
9. CONTROL BOX receptacle
10. TRANSMITTER receptacle
11. Grounding strap
12. BATTERY receptacle
13. Dynamotor DY-22/ARC-3

Figure 1-2. Power Junction Box J-68/ARC-3 on Mounting Base MT-236B/ARC-3

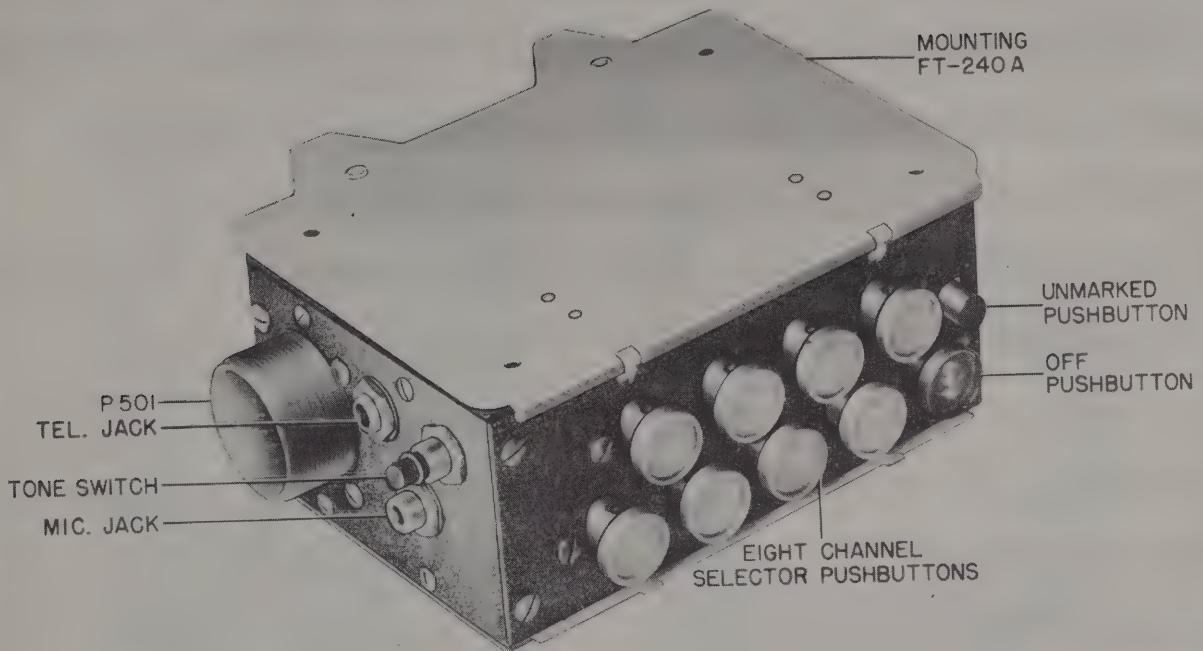


Figure 1-3. Control Box C-118/ARC-3

used to reduce body capacity to a minimum when aligning Radio Set AN/ARC-3.

1-18. **TUNING WAND MX-173/ARM-1.** The tuning wand is made of clear plastic. Imbedded in one end is a powdered iron slug and the other end has a copper slug. The wand is used to determine the resonant condition of various circuits.

1-19. **RELAY MAINTENANCE TOOLS.** Three relay-contact forming tools and a relay burnishing tool are supplied as part of the test set.

1-20. **CRYSTAL UNIT CR-1A/AR.** The crystal units consist of a thin quartz plate housed in a bakelite holder, with plug terminals. The crystal units are used to select various frequencies in the transmitter and the receiver.

1-21. **CAP MX-506/ARM-1.** The cap is threaded to fit the motor switch buttons. When the receiver or the transmitter top covers are removed, the cap is used to hold the motor switch closed. This will enable normal tuning operation.

1-22. **EQUIPMENT SUPPLIED.** Table I lists the equipment supplied.

1-23. **LEADING PARTICULARS.**

1-24. **POWER REQUIREMENTS.** An input voltage of 28 volts d-c plus or minus 1/2 volts must be provided for the test set. When Power Junction Box J-68/ARC-3 is connected to Radio Set AN/ARC-3 the current drain of the test set will be 5.5 amperes when the Radio Receiver R-77/ARC-3 is operating, and 12 amperes when

TABLE I. EQUIPMENT SUPPLIED

Quantity Per Equipment	Name of Unit	AN Type Designation	Numerical Series of Ref Symbols
1	Power Junction Box, without mounting base, plugs or dynamotors	J-68/ARC-3 or J-68A/ARC-3	401-499
1	Dynamotor Unit	DY-21/ARC-3	
1	Dynamotor Unit	DY-22/ARC-3	

TABLE I. EQUIPMENT SUPPLIED (cont)

Quantity Per Equipment	Name of Unit	AN Type Designation	Numerical Series of Ref Symbols
1	Mounting Base	MT-236B/ARC-3	501-599
1	Control Box without mounting or plugs	C-118/ARC-3	
1	Mounting	FT-240-A	701-799
1	Chest	CY-146/ARM-1	
1	Test Unit	TS-178/ARM-1	
2	Adapter	PL-272	
1	Adapter	MX-293/ARM-1	
1	Shorting Plug	U-30/ARM-1	
1	Shunting Unit	MX-294/ARM-1	
1	Alignment Tool	MX-174/ARM-1	
1	Tuning Wand	MX-173/ARM-1	
1	Set of Relay Maintenance Tools		
1	Cord	CX-214/ARM-1	
1	Cord	CX-215/ARM-1	
1	Cord	CX-216A/ARM-1	
1	Cord	CX-217/ARM-1	
1	Crystal Unit	CR-1A/AR (5555.555kc)	
1	Crystal Unit	CR-1A/AR (6944.444kc)	
1	Crystal Unit	CR-1A/AR (8000.000kc)	
1	Crystal Unit	CR-1A/AR (8100.000kc)	
1	Crystal Unit	CR-1A/AR (8458.823kc)	
1	Crystal Unit	CR-1A/AR (8727.000kc)	
2	Spare Fuse Kit		
2	Cap	MX-506/ARM-1	

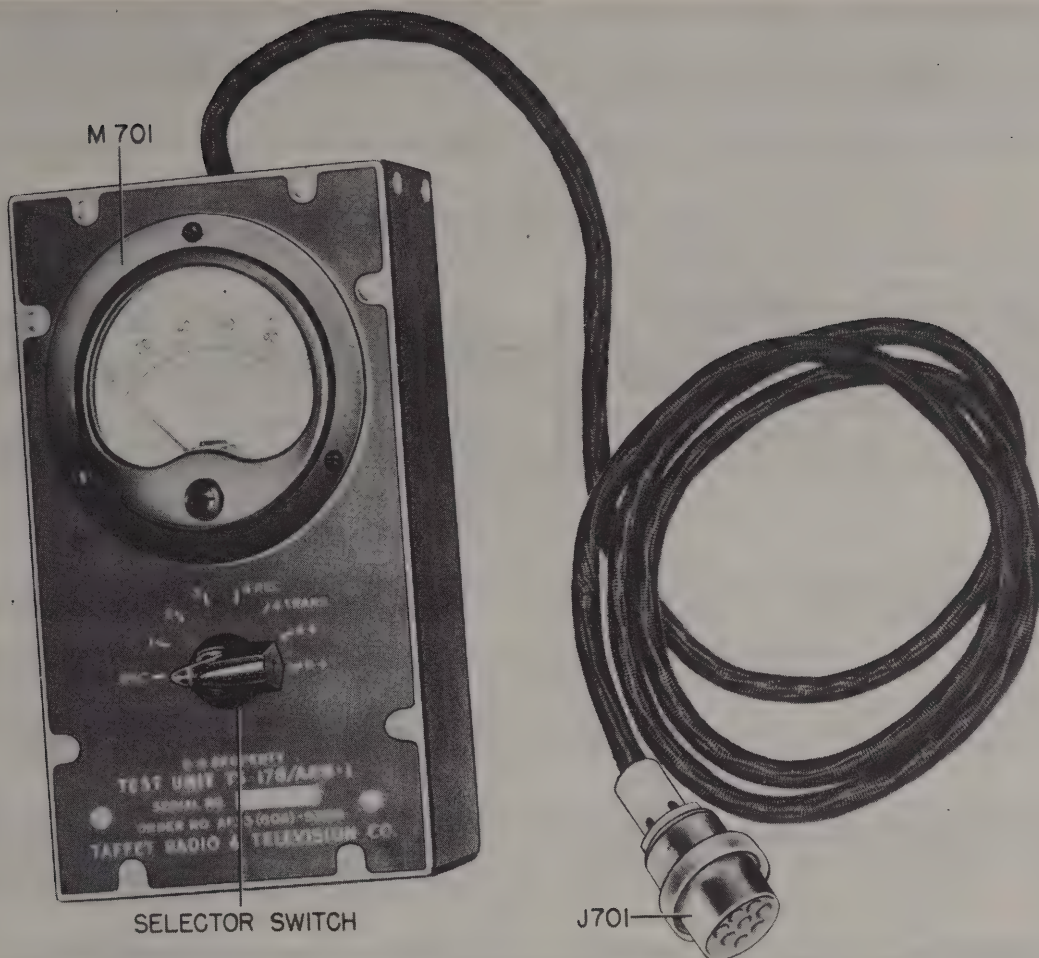


Figure 1-4. Test Unit TS-178/ARM-1

the Radio Transmitter T-67/ARC-3 is operating. No power is consumed by any other assembly of the test equipment from the input voltage source.

1-25. **FREQUENCY RANGE.** Supplied with the test set are six Crystal Units CR-1A/AR. They are used

in Radio Set AN/ARC-3 so that it can be tested throughout the frequency range of 100 to 156 megacycles.

1-26. **DYNAMOTOR DATA.** The following table II lists the input and output voltage and current ratings for the dynamotor units.

TABLE II. DYNAMOTOR DATA

	DY-21/ARC-3	DY-22/ARC-3
Input voltage	28 volts dc	28 volts dc
Full load input current	7 amp.	1.8 amp.
No load input current	1 amp.	0.8 amp.
Full load intermittent output voltage	410 volts dc	
Full load continuous output voltage		210 volts dc
Intermittent current (30 seconds on, 30 seconds off)	325 ma	
Continuous current drain		125 ma
No load output voltage	450 volts dc	230 volts dc

1-27. **FUSE COMPLEMENT.** Table III lists the fuse complement.

1-28. **TEST UNIT METER.** The meter used in Test Unit TS-178/ARM-1 has a 0 to 50 micro-ampere d-c D'Arsonval movement with an accuracy of plus or minus

2 percent. Various shunt and multiplier resistors are connected to the meter via the selector switch or the front panel of the test unit.

1-29. **OPERATING CONTROLS.** In table IV the following controls and their functions are tabulated.

TABLE III. FUSE COMPLEMENT

Quantity	Manufacturer and Type No.	Reference Symbol	Ampere Rating
4	Littelfuse No. 1007	F401, F402	1/2 amp. 250V
2	Buss type 3AG25	F701	25 amp. 25V

TABLE IV. OPERATING CONTROLS

CONTROL	FIGURE NO.	FUNCTION
Pushbuttons A through H	figure 1-3	Selects various channels on the radio and the radio transmitter.
OFF button	figure 1-3	Stops the equipment.
Unmarked button	figure 1-3	Mechanically locks the OFF button in the ON position.
Selector switch	figure 1-4	Selects various scales to indicate, on the test unit meter, various voltage and current readings of the radio transmitter and radio receiver.
TONE switch	figure 1-3	Used as a key during modulated-continuous-wave operation.

SECTION II

TEST EQUIPMENT AND SPECIAL TOOLS

2-1. **TEST EQUIPMENT.** A Multimeter TS-352/U or equivalent is the only required test equipment for the testing and servicing of the Radio Test Set AN/ARM-1.

SECTION III

PREPARATION FOR USE AND RESHIPMENT

3-1. PREPARATION FOR USE.

3-2. UNPACKING THE EQUIPMENT. Unpack the equipment with care, to avoid scratching or damaging the equipment. Look carefully for signs of damage in transit that may make it inadvisable to apply power without preliminary check and repair. The Radio Test Set AN/ARM-1 is furnished as a complete unit contained in Chest CY-146/ARM-1, as described in Section I. Check the equipment for any missing parts (refer to par. 1-22). Spring clips have been provided for a Phantom Transmitter Antenna TS-78/U (A-85-A) and a spare lamp kit, which must be installed before the test set is sent into the field for use.

3-3. INTERCONNECTING CORDS OF THE RADIO TEST SET AN/ARM-1. Ordinarily the equipment is supplied with the cords plugged into the units of the radio test set. If the cords are not inserted, make the following connections:

- a. Insert one end of Cord CX-217/ARM-1 into the Power Junction Box J-68/ARC-3 receptacle marked PL-148/A.
- b. One end of Cord CX-216A/ARM-1 terminates in a single plug marked U-15/U. Insert this end into the

power junction box receptacle marked U-15/U. The other end of this cord has a dual termination consisting of a plug marked U-15/U and a plug marked PL-151A.

- c. Insert one end of Cord CX-214/ARM-1 into the power junction box receptacle marked U-16/U and the other end into the Control Box C-118/ARC-3 receptacle marked U-16/U.

NOTE

The above steps are for interconnecting the test set only. When operating the test set refer to the applicable T.O. for connecting the test set to the equipment to be tested.

3-4. RESHIPMENT. Securely fasten all components of Radio Test Set AN/ARM-1 in Chest CY-146/ARM-1. Seal the chest in a corrugated carton. Heat-seal the carton in a moisture-vaporproofed barrier and cover with a second corrugated carton. This will suffice for domestic shipping. If there is any danger that it may become crushed, follow the above procedure and crate it.

SECTION IV

THEORY OF OPERATION

4-1. GENERAL.

4-2. The test set is designed for use in the alignment, testing, and maintenance of Radio Set AN/ARC-3. It is not designed for operation during flight; however, it may be transported to various points where maintenance work will be performed.

4-3. DETAILED OPERATION.

4-4. POWER JUNCTION BOX J 68/ARC-3. The power junction box (figure 7-1) provides a high voltage supply for the Radio Transmitter T-67/ARC-3 and the Radio Receiver R-77/ARC-3, components of the Radio Set AN/ARC-3, while they are being tested and aligned. A primary voltage of 28 volts d-c is required to operate the Dynamotor DY-21/ARC-3, and Dynamotor DY-22/ARC-3. DY-21/ARC-3 generates power for the transmitter and DY-22/ARC-3 generates power for the receiver. The radio receiver dynamotor unit runs continuously, as long as any channel selector pushbutton is depressed. The radio transmitter dynamotor unit operates only when the microphone push-to-talk button or TONE button is depressed.

Both the input and output circuits of the dynamotors are adequately filtered to suppress their noise in the receiver. A fuse is provided on each high voltage circuit to protect the receiver, transmitter and dynamotors when an overload or short exists. The power junction box also contains relays K401, K402, K403, K404, K405 and K406. These relays are associated with the tuning system of the radio transmitter and radio receiver. (Their action is fully described in the Handbook of Maintenance Instructions for Radio Set AN/ARC-3). This unit also serves as a junction box for the necessary interconnections between the Control Box C-118/ARC-3, radio transmitter and the radio receiver.

4-5. CONTROL BOX C-118/ARC-3. The control box (figure 7-2) provides for complete remote control of Radio Set AN/ARC-3. The major component of this unit is the nine-pole, pushbutton switch S501 which is used for controlling the input power and selecting the desired frequency channels. Each of the eight channel buttons operates a corresponding crystal relay in both the radio transmitter and radio receiver. The equipment is off when the OFF button is depressed. In

order to place the equipment in operation, it is necessary to push any one of the eight red push buttons. When this is done, a mechanical latch automatically releases the OFF button, closing switch S501J. This completes the ground connection for relay K401 causing its contacts to close, thus connecting the A voltage to the radio receiver and radio transmitter tube heaters, to Dynamotor Unit DY-22/ARC-3, and to the tuning control relay circuits. The equipment then automatically tunes to the selected channel. Jack J502 is provided to accommodate the headset. This is connected either to the audio output of the radio receiver or to the sidetone output of the radio transmitter, depending on which unit is being used. Microphone jack J501 provides connections for the audio input to the radio transmitter and also for the microphone push-to-talk button.

4-6. TEST UNIT TS-178/ARM-1. The test unit (figure 7-3) is designed to check A and B voltages and the grid and plate currents in the various stages of the harmonic generator system for both the transmitter and receiver. A switch with eight positions is provided for selecting the various portions of the circuits to be measured. The shunt and series resistors for determining the proper meter range are automatically connected by means of this switch. Some of these resistors are located in the test unit and others are in the radio transmitter and radio receiver. The normal full scale range of the test unit meter without the shunt and multiplier resistors is 50 microamperes. The scale reads from 0 to 1000 with 50 calibration markings.

4-7. ELECTRICAL CHARACTERISTICS OF THE TEST UNIT WHEN USED WITH RADIO TRANSMITTER T-67/ARC-3.

a. When the selector switch is set in the OSC position, the meter indicates the grid current of the radio transmitter oscillator tube. The 18-ohm shunt resistor R102 which is located in the radio transmitter is shunted across the meter, making the full scale range of the meter approximately 6.2 milliamperes dc.

b. With the selector switch in the 1 position the meter indicates the grid current of the first harmonic generator tube. A 39-ohm shunt resistor R108 is provided in the radio transmitter, making the full scale range of the meter approximately 2.9 milliamperes dc.

c. In position 2 the meter indicates the grid current of the second harmonic generator tube. A 22-ohm shunt resistor R113 in the radio transmitter makes the full scale reading approximately 5 milliamperes dc.

d. In position 3 the meter indicates the grid current in the power amplifier tube. A 22-ohm shunt resistor R113 in the radio transmitter makes the full scale reading approximately 5 milliamperes dc.

e. The 4 REC position is not used when aligning the radio transmitter.

f. POSITION 4 TRANS. In the 4 TRANS position, the meter indicates the plate current in the power amplifier tube. A 560K-ohm resistor R126 is connected in series with the meter and this combination is shunted by a 275-ohm resistor R125A, making the full scale reading approximately 100 milliamperes dc.

g. A one-megohm multiplier resistor R701 located in the test unit is connected in series with the meter, in the A + position. In this position the full scale reading is 50 volts dc.

h. A 10-megohm multiplier resistor R702 in the test unit is connected in series with the meter, in the B + position. The full scale reading in this position is 500 volts dc.

4-8. ELECTRICAL CHARACTERISTICS OF THE TEST UNIT WHEN USED WITH RADIO RECEIVER R-77/ARC-3.

a. With the selector switch in the OSC position the meter indicates the grid current in the fundamental amplifier tube. A 2200-ohm shunt resistor R206, located in the radio receiver, is shunted across the meter, making the full scale range of the meter approximately 100 microamperes dc.

b. In the 1 position the meter indicates the grid current in the harmonic amplifier tube. A 1000-ohm shunt resistor R216 in the radio receiver makes the full scale reading approximately 160 microamperes dc.

c. In the 2 position the meter indicates the grid current of the first harmonic amplifier tube. A 10,000-ohm shunt resistor R221 is provided in the radio receiver making the full scale range of the meter approximately 60 microamperes dc.

d. In the 3 position the meter indicates the grid current in the second harmonic amplifier tube. A 10,000-ohm shunt resistor R228 in the radio receiver makes the full scale reading of the meter approximately 61 microamperes dc.

e. On the 4 REC position the meter indicates the grid current in the first detector tube. A 10,000-ohm shunt resistor R244 in the radio receiver makes the full scale reading approximately 61 microamperes dc.

f. The 4 TRANS position is not used when aligning the radio receiver.

g. In the A + position a one-megohm resistor R-701 located in the test unit is connected in series with the meter. The full scale reading is 50 volts dc.

h. In the B + position a 10-megohm multiplier resistor R702, in the test unit, is connected in series with the meter. The full scale reading is 500 volts dc.

4-9. TUNING WAND MX-173/ARM-1. The tuning wand is used in conjunction with the test unit to check the resonance of the various tuned circuits in the radio transmitter and radio receiver. In order to check the resonance of a circuit, either end of the tuning wand may be brought into the field of the coil. If the meter reading increases when the end containing the iron slug is put into the field, it indicates that additional inductance or capacitance is needed to resonate the circuit. If the meter reading increases when the copper end is brought into the field of the coil, it indicates that less inductance or capacitance is needed. If the circuit is in perfect tune, the meter reading will decrease when either end of the tuning wand is brought near the coil. In the power amplifier (4 TRANS on the test meter) of the radio transmitter, the minimum reading indicates resonance.

4-10. SHUNTING UNIT MX-294/ARM-1. This unit is connected across the primary of the i-f transformers while the secondary is being aligned. It connects a re-

sistance load across the unused coil, thus preventing any detuning effects which may be due to the coupling between the coils. A capacitor, in series with the resistor, prevents damage to the set if the unit is connected across the wrong terminals of the transformer.

4-11. **SHORTING PLUG U-30/ARM-1.** This plug has a five-prong base designed for plugging into the socket from which relay K201 is removed during part of the alignment of the radio receiver. Pins No. 2 and No. 4 of the plug are connected together to short the contacts of the relay socket which are normally connected to the contacts of the tuning relay, when the relay is plugged in. This permits motor B201 to be started by depressing switch S203.

4-12. **ADAPTER PL-272.** This adapter is provided for connecting the output of Signal Generator I-96-A to the ANTENNA receptacle on the front panel of the radio receiver. One end of the adapter is machined to fit the ANTENNA receptacle of the radio receiver and the other, to fit the signal generator output connector.

4-13. **ADAPTER MX-293/ARM-1.** This adapter consists of contact clips mounted on an insulated base and formed in such a manner so that when the adapter is installed on the variable capacitor frame of the radio receiver, contact is made with the grid pin of tube JAN-9001 (V209), for the purpose of applying the signal generator's output to the grid of the first detector tube when the signal generator is connected to the adapter.

SECTION V

ORGANIZATIONAL MAINTENANCE

5-1. GENERAL.

5-2. This section details the procedures for checking and making minor repairs on the Radio Test Set AN/ARM-1. The procedures described in this section are limited to the capabilities of organizational personnel. If the use of the material in this section does not reveal an existing fault in the test set, reference may be made to the more detailed information given in paragraphs 6-1 through 6-8 of this handbook.

5-3. INSPECTION SCHEDULE.

5-4. In Table V the inspection schedule of the test set is tabulated.

5-5. MINOR REPAIRS.

5-6. FUSE REPLACEMENT.

a. Fuses for the high voltage circuit of the radio transmitter and radio receiver together with a spare for each are located on the power junction box. The radio transmitter fuse will be found at the left end of the transmitter dynamotor unit. The radio receiver fuse is situated at the right end of the receiver dynamotor unit.

b. A visual check will indicate the condition of the fuse. A spare fuse, for replacement of a burned out fuse, is provided in a holder adjacent to each operating fuse and is so marked. Additional fuses for replacement purposes are packed in the radio test set. The

TABLE V. INSPECTION SCHEDULE

COMPONENT	INSPECTION	TIME
Chest CY-146/ARM-1.	Check the contents of Chest CY-146/ARM-1. (Refer to par. 1-22, Sect. I).	25 hr.
Cords.	Check the conditions of all cords and plugs.	25 hr.
Mountings.	Make sure the mountings which hold the equipment are securely attached to the chest.	25 hr.
Power Junction Box J-68/ARC-3.	Remove the covers from each fuse clip and make sure the active fuse is held securely in the clips. Check that a spare fuse is provided for each circuit.	100 hr.
	Remove the end covers from each dynamotor unit and inspect the condition of the brushes and commutators. Refer to paragraphs 5-7 and 6-7 of this handbook for cleaning and replacement procedure.	
	Check lubrication of the dynamotor units. Refer to paragraph 5-8 of this section for the lubrication procedure.	100 hr.

larger Dynamotor Unit DY-21/ARC-3 supplies high voltage to the radio transmitter, and Dynamotor Unit DY-22/ARC-3 supplies the high voltage to the radio receiver. The fuses located adjacent to either dynamotor protect that dynamotor in case of a short circuit or overload in the radio transmitter or radio receiver, respectively. Repeated burnouts indicate either a defective tube, radio transmitter, radio receiver or some other case of high current and the trouble must be corrected.

c. A bayonet-type fuse holder situated in one lead of Cord CX-217/ARM-1 contains a 25-ampere fuse for the entire equipment. Fuses for replacement purposes are contained in the radio test set.

5-7. REPLACEMENT OF DYNAMOTOR BRUSHES. (See figure 5-1.)

WARNING

Do not attempt to replace brushes when the dynamotors are running. Always turn off all power.

a. Low or erratic high voltage or excessive noise in the headsets usually indicates defective dynamotor

brushes. Remove the end covers on the dynamotor, unscrew the bakelite brush-holder caps and examine the brushes. Replace any brush worn in excess of one-half its original length. A complete set of new brushes will be found in the small metal can mounted on a bracket beneath the high voltage end of both dynamotors.

b. Replace the drive motor brushes when worn in excess of one-half their original length. Two metal screws, in the housing of the low-voltage end of the dynamotor, provide access to the brushes.

5-8. LUBRICATION.

5-9. The only assemblies of the Radio Test Set AN/ARM-1 which require lubrication are the dynamotors of Power Junction Box J-68/ARC-3. Using Grease MIL-L-7711, lubricate Dynamotor Unit DY-21/ARC-3 every 200 hours and Dynamotor Unit DY-22/ARC-3 every 500 hours.

CAUTION

Do not over-lubricate. Excessive lubrication can cause serious damage to the commutator.

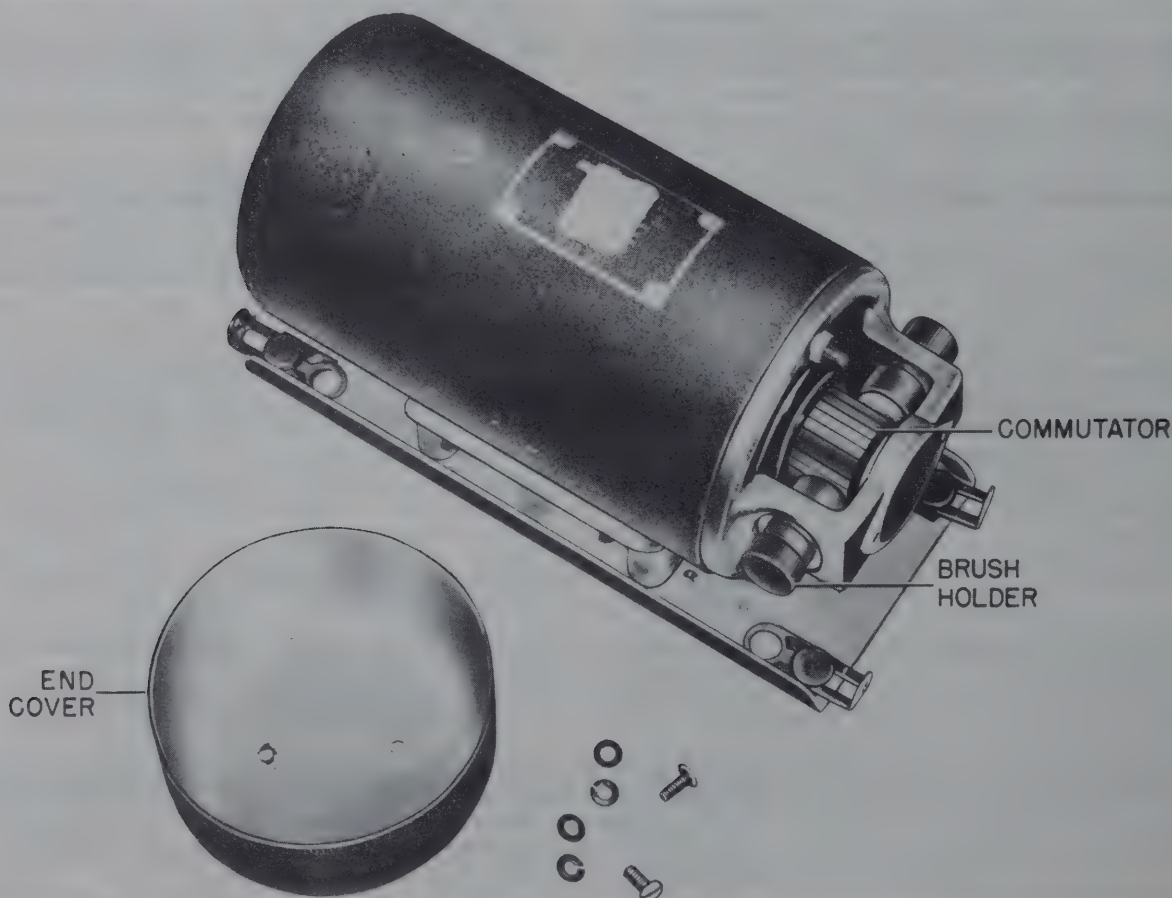


Figure 5-1. Dynamotor Unit DY-21/ARC-3 With Cover Removed

SECTION VI

FIELD MAINTENANCE

6-1. GENERAL.

6-2. The procedures given in this section are used in cases where the trouble still persists after following the procedures given in Section V. This section provides a detailed trouble analysis method for localizing specific circuit or component failure. This work should be undertaken only by qualified personnel.

6-3. TROUBLE ANALYSIS.

6-4. The most frequent operating difficulties can usually be repaired or the necessary adjustments made, without disassembly of the major assemblies. Check the trouble symptoms against those listed in table VI. For replacing parts see figures 6-1, 6-2 and 6-3.

NOTE

It is assumed that the Radio Test Set AN/ARM-1 is connected to a Radio Set AN/ARC-3 which is operating satisfactorily and that the trouble symptoms listed in table VI are those localized to the radio test set.

6-5. DETAILED TROUBLE SHOOTING.

6-6. Systematic operating tests should be made to definitely determine the nature of the trouble existing in the test equipment.

a. Check the operation of the test equipment and localize the operating difficulties to the section of the assembly by the use of the trouble chart given in table VI.

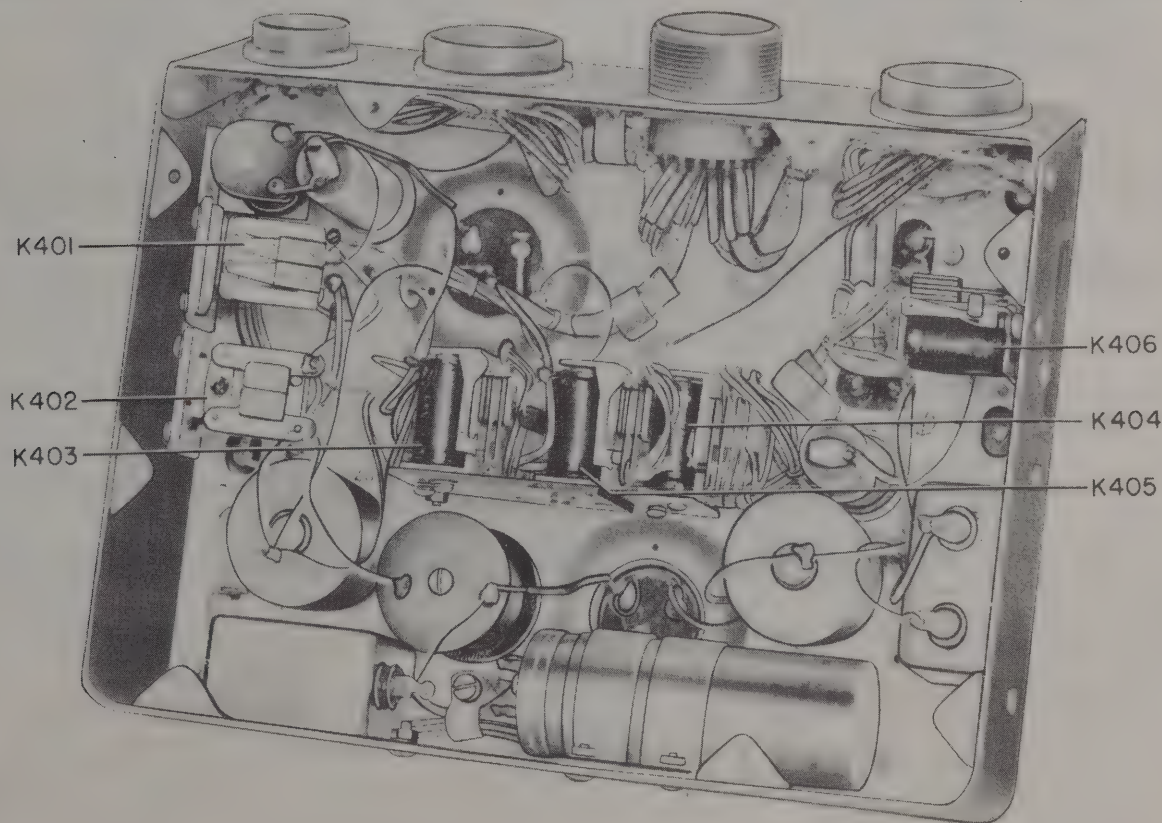


Figure 6-1. Power Junction Box, Bottom View

b. Trouble which cannot be located or corrected by use of the trouble chart will require a more detailed procedure. Check the various components of each assembly where trouble exists by use of the multi-tester and the resistance charts.

6-7. CLEANING DYNAMOTOR COMMUTATORS.

WARNING

A high voltage which is dangerous to life exists at the high voltage end of each dynamotor unit. Turn off all power when inspecting the condition of the commutators. When cleaning the commutators use extreme caution to prevent direct contact with the high voltage.

6-8. After each 300 hours of operation the end covers of the dynamotor units should be removed and the

commutators (figure 5-1) inspected. The normal color of the commutator, after the dynamotor has been in use, is a dull brown. When this color darkens excessively, the commutator should be cleaned by applying a strip of coarse canvas to the commutator while the dynamotor is operating. If the commutator appears to be burned or extremely discolored it should be cleaned with a strip of No. 00 sandpaper. Do not apply excessive pressure on the sandpaper as needless wear on the commutator will result. Blow out all particles of carbon and copper dust after cleaning the commutator.

CAUTION

Never use emery cloth to clean or resurface a commutator. The metallic abrasive of emery cloth can cause shorts between the commutator bars, resulting in unsatisfactory operation.

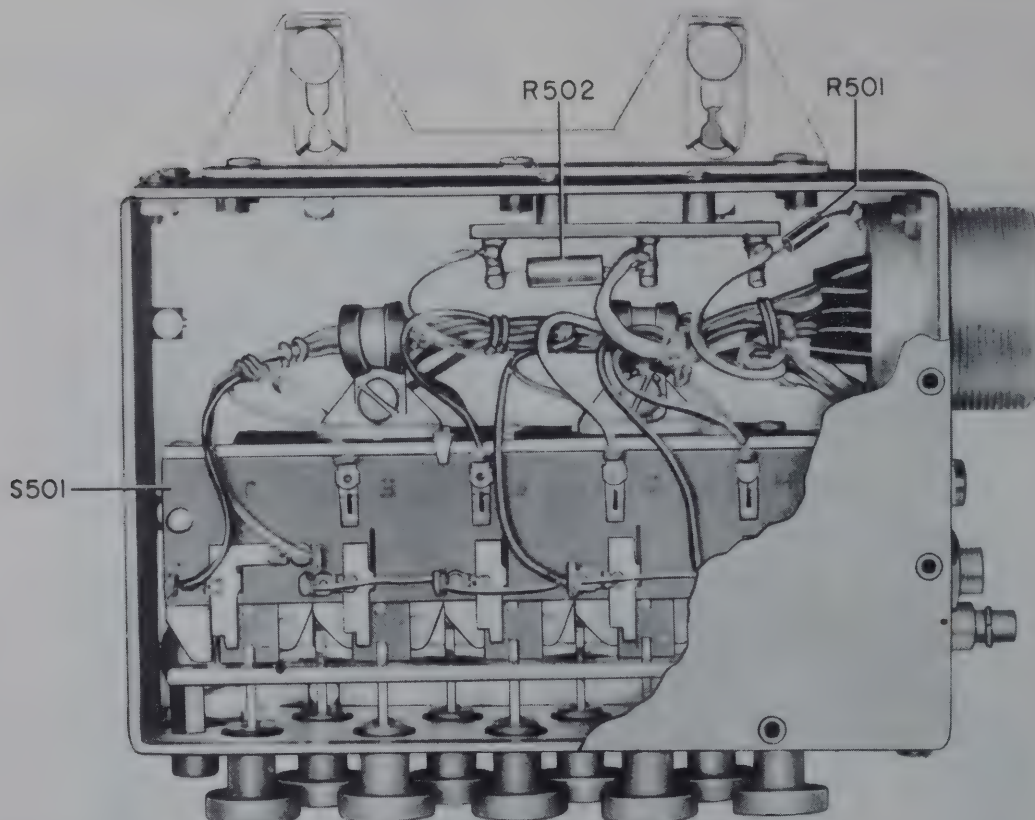


Figure 6-2. Control Box, Bottom View

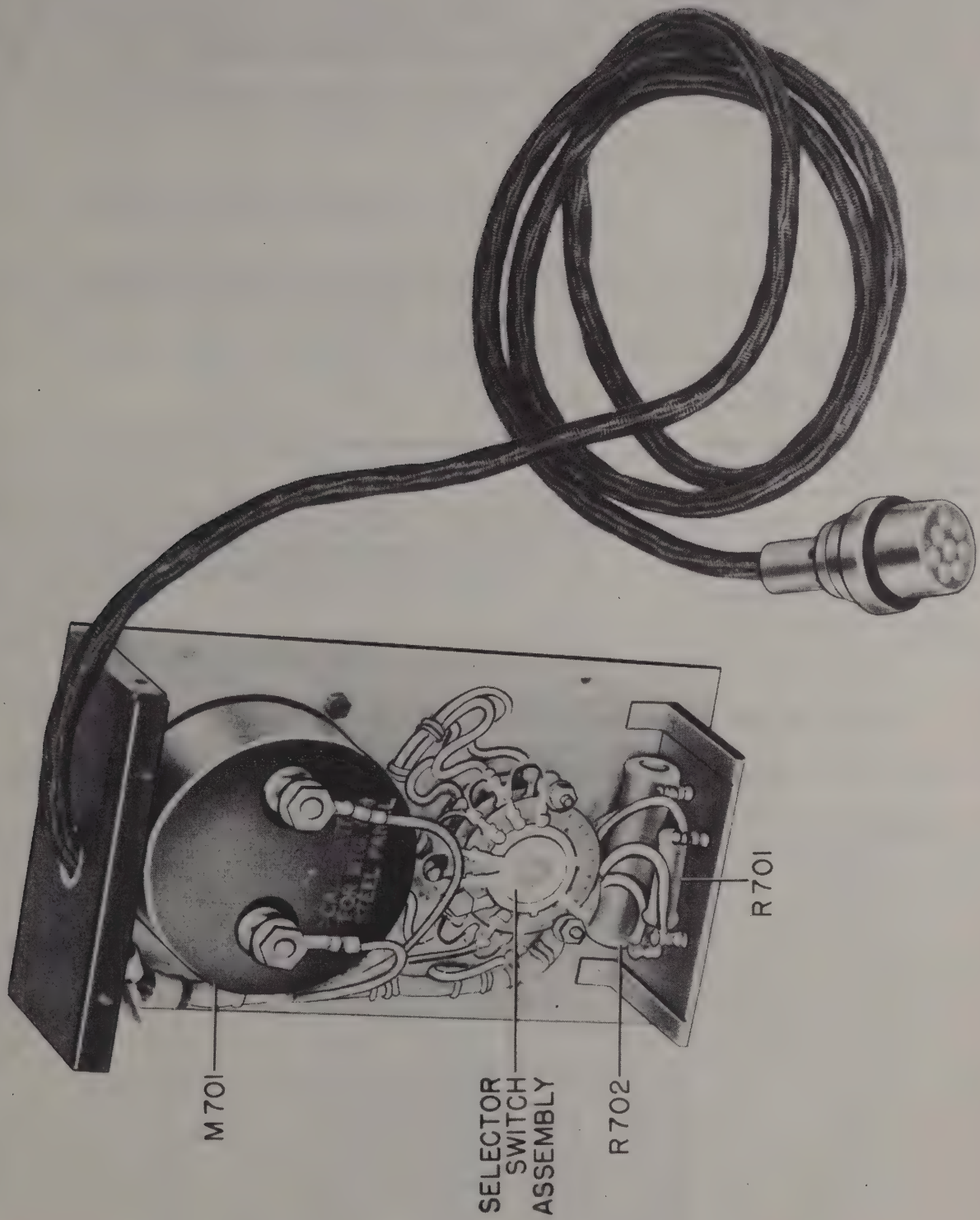


Figure 6-3. Test Unit, Bottom View

TABLE VI. TROUBLE CHART

TROUBLE	PROBABLE CAUSE AND REMEDY
Receiver dynamotor will not start.	Check input voltage connections; clean contacts of relay K401; check input voltage source; check plug connections and cords; defective armature; control box or low voltage brushes.
Transmitter dynamotor will not start, receiver dynamotor operates normally.	Defective relay K401 or K402, low voltage brushes; open choke L401; defective armature.
No high voltage available from the transmitter dynamotor.	No input voltage; defective fuse F401, choke L402, capacitor C402 or C403; defective armature, wiring or plug connection.
No high voltage from receiver dynamotor.	No input voltage; defective fuse F402, choke L403, capacitor C404 or C405; defective armature, wiring or plug connection.
Impossible to select channels by depressing pushbuttons on Control Box C-118/ARC-3.	Defective switch S501 in the control box; defective wiring or plug connections.
No reading obtained on Test Unit TS-178/ARM-1 with the selector switch in any position.	Defective selector switch, meter, or wiring.
No reading obtained in one or more positions of the selector switch, but normal readings obtained in other positions.	Defective shunt or multiplier resistors (refer to Section IV par. 4-6 through 4-8); defective selector switch or wiring.

TABLE VII. RESISTANCE MEASUREMENTS FOR POWER JUNCTION BOX
J-68/ARC-3 (fig. 7-1) or J-68A/ARC-3

CONNECTOR	FROM	TO	RESISTANCE IN OHMS
P401	Pin 1	P403 Pin C	225
	Pin 2	Ground	0
	Pin 3	P403 Pin C	225
P402	Pin 1	P403 Pin V	0
	Pin 2	P403 Pin K	0
	Pin 3	P403 Pin Q	0
	Pin 4	P403 Pin R	0
	Pin 5	Ground	0
	Pin 6	P403 Pin W	0
	Pin 7	P403 Pin Y	0
	Pin 8	P403 Pin X	0
	Pin 9	P403 Pin Z	0
	Pin 10	Ground	185
	Pin 11	P403 Pin A	0
	Pin 12	Ground	190
	Pin 13	Ground	1.5
	Pin 14	K406 Term 2	0
	Pin 15	P403 Pin U	0
	Pin 16	Ground	150

TABLE VII. RESISTANCE MEASUREMENTS FOR POWER JUNCTION BOX
J-68/ARC-3 (fig. 7-1) J-68A/ARC-3 (cont)

CONNECTOR	FROM	TO	RESISTANCE IN OHMS
P403	Pin B	Ground	150
	Pin E	Ground	0
	Pin J	Ground	0
	Pin M	Ground	400 160*
	Pin P	Ground	1.5
P404	Pin 1	P403 Pin V	0
	Pin 2	P403 Pin K	0
	Pin 3	P403 Pin Q	0
	Pin 4	P403 Pin R	0
	Pin 5	P403 Pin W	0
	Pin 6	P403 Pin Y	0
	Pin 7	Ground	0
	Pin 8	P403 Pin X	0
	Pin 9	P403 Pin Z	0
	Pin 10	Ground	0
	Pin 11	Ground	400
	Pin 12	Ground	190
	Pin 13	Ground	150
	Pin 14	P403 Pin D	0
	Pin 15	Ground	1.5
	Pin 16	P403 Pin D	0
	Pin 17	P403 Pin A	0
	Pin 18	Ground	Infinite
P405	Pin 1	Ground	1.5
	Pin 2	Ground	0
	Pin 3	Ground	85
P406	Pin 1	Ground	15
	Pin 2	Ground	0
	Pin 3	Ground	140

* For Power Junction Box J-68/ARC-3 with M-2 Modification or for J-68A/ARC-3

TABLE VIII. RESISTANCE MEASUREMENTS FOR CONTROL BOX C-118/ARC-3 (fig. 7-2).

CONNECTOR	FROM	TO	RESISTANCE IN OHMS
P501	Pin A	J501 Term 1	0
	Pin B	J501 Term 2	0
	Pin C	S501 Term J	0
	Pin D	J502	0
	Pin E	Ground	0
	Pin F	P501 Pin D	1,000
	Pin G	Ground	270
	Pin H	P501 Pin F	0
	Pin J	S501 Common	0
	Pin K	S501 Term B	0
	Pin Q	S501 Term C	0
	Pin R	S501 Term D	0
	Pin U	Ground	Infinite
	Pin V	S501 Term A	0
	Pin W	S501 Term E	0
	Pin X	S501 Term G	0
	Pin Y	S501 Term F	0
	Pin Z	S501 Term H	0

TABLE IX. RESISTANCE MEASUREMENTS FOR TEST UNIT TS-178/ARM-1 (fig. 7-3).

FROM	TO	RESISTANCE IN OHMS
J701 Pin 1	S701 OSC terminal front sector	0
Pin 2	S701 1 terminal front sector	0
Pin 3	S701 2 terminal front sector	0
Pin 4	Ground	0
Pin 5	S701 3 terminal front sector	0
Pin 6	S701 4 REC terminal front sector	0
Pin 7	S701 A+ terminal rear sector	1 megohm
Pin 8	S701 B+ terminal rear sector	10 megohms
S701 4 TRANS terminal front sector	Ground	0
A+ terminal front sector	Ground	0
B+ terminal front sector	Ground	0
OSC terminal rear sector	Ground	0
1 terminal rear sector	Ground	0
2 terminal rear sector	Ground	0
3 terminal rear sector	Ground	0
4 REC terminal rear sector	Ground	0
4 TRANS terminal rear sector	4 REC terminal front sector	0

SECTION VII

DIAGRAMS

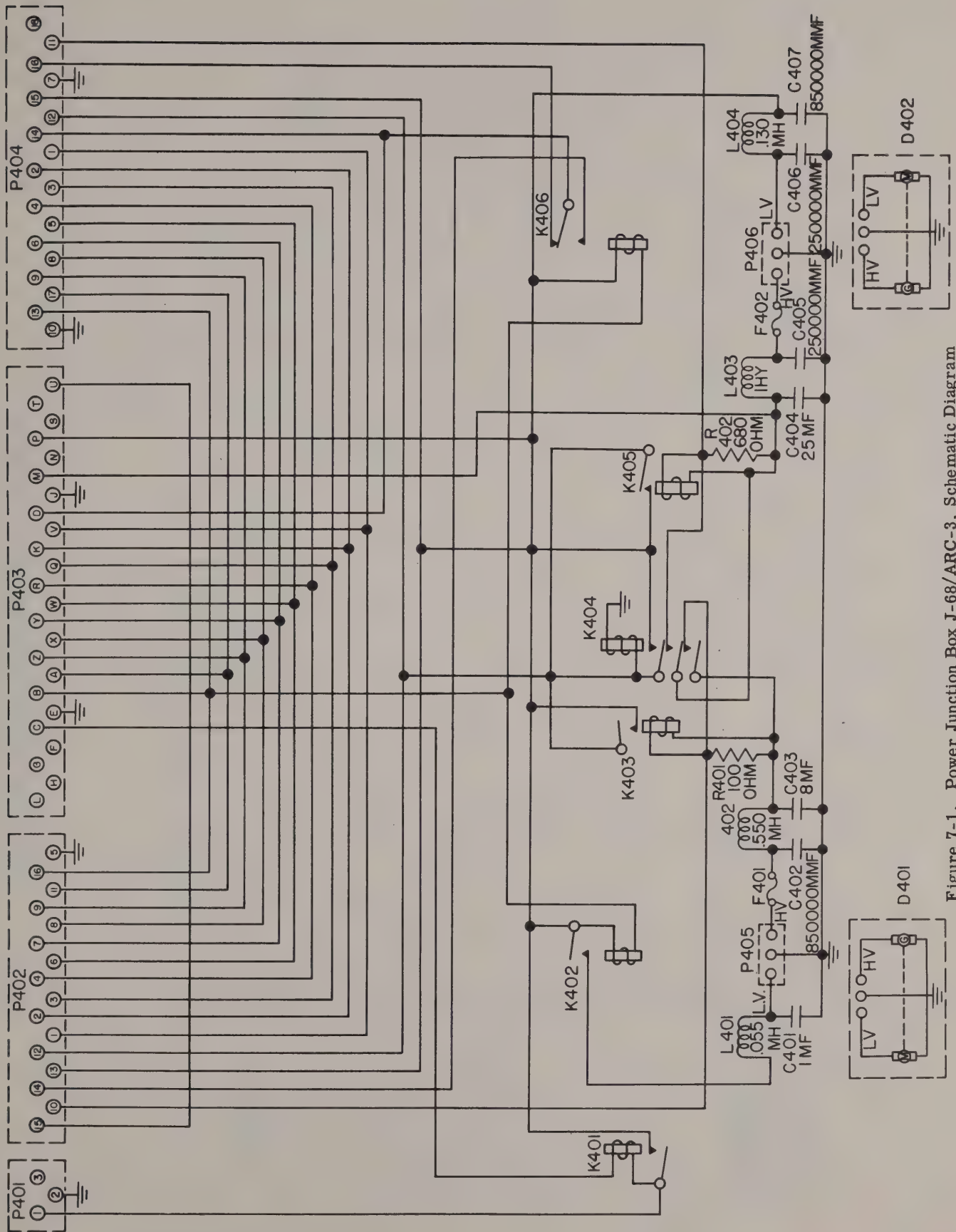


Figure 7-1. Power Junction Box J-68/ARC-3, Schematic Diagram

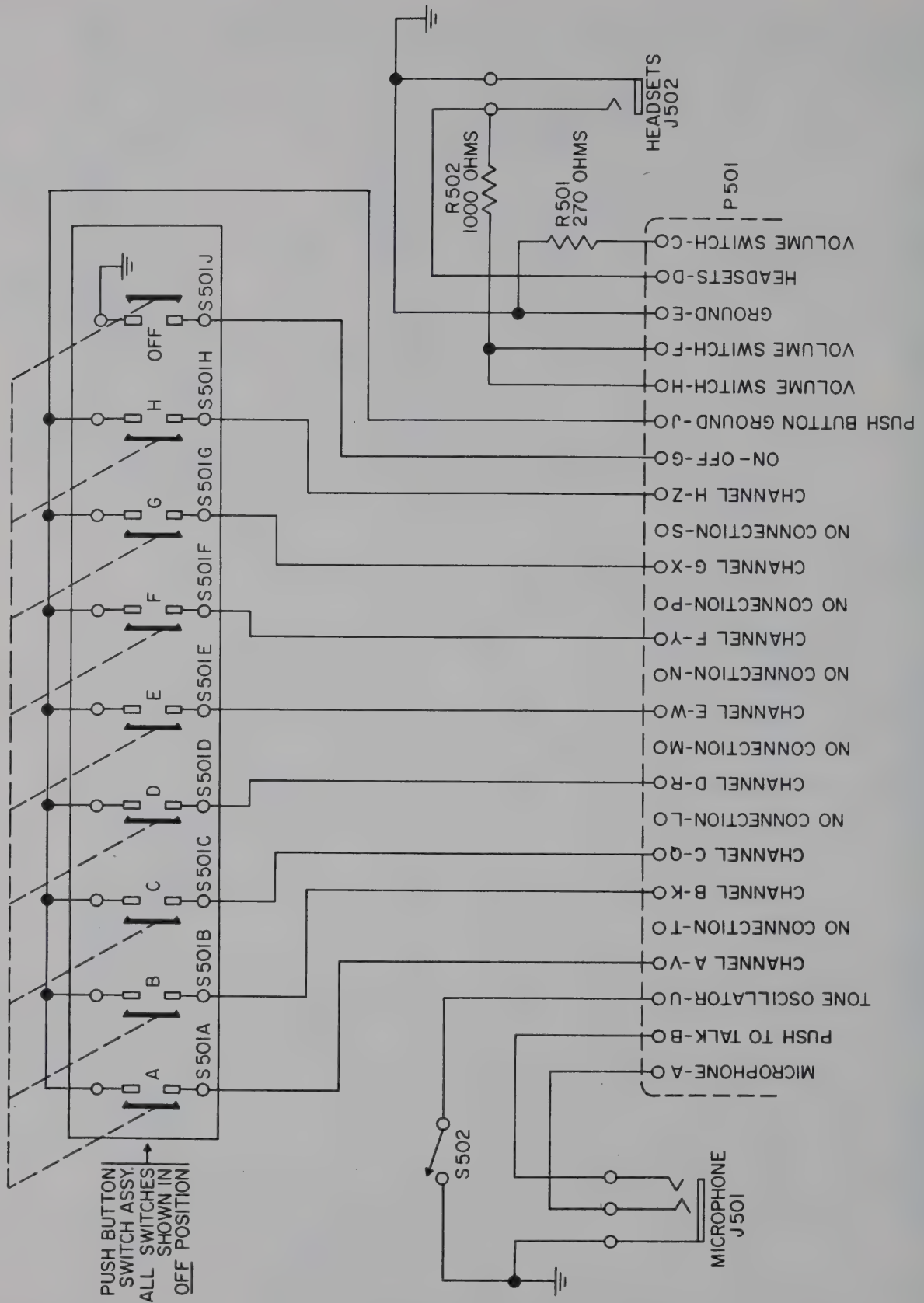


Figure 7-2. Control Box C-118/ARC-3, Schematic Diagram

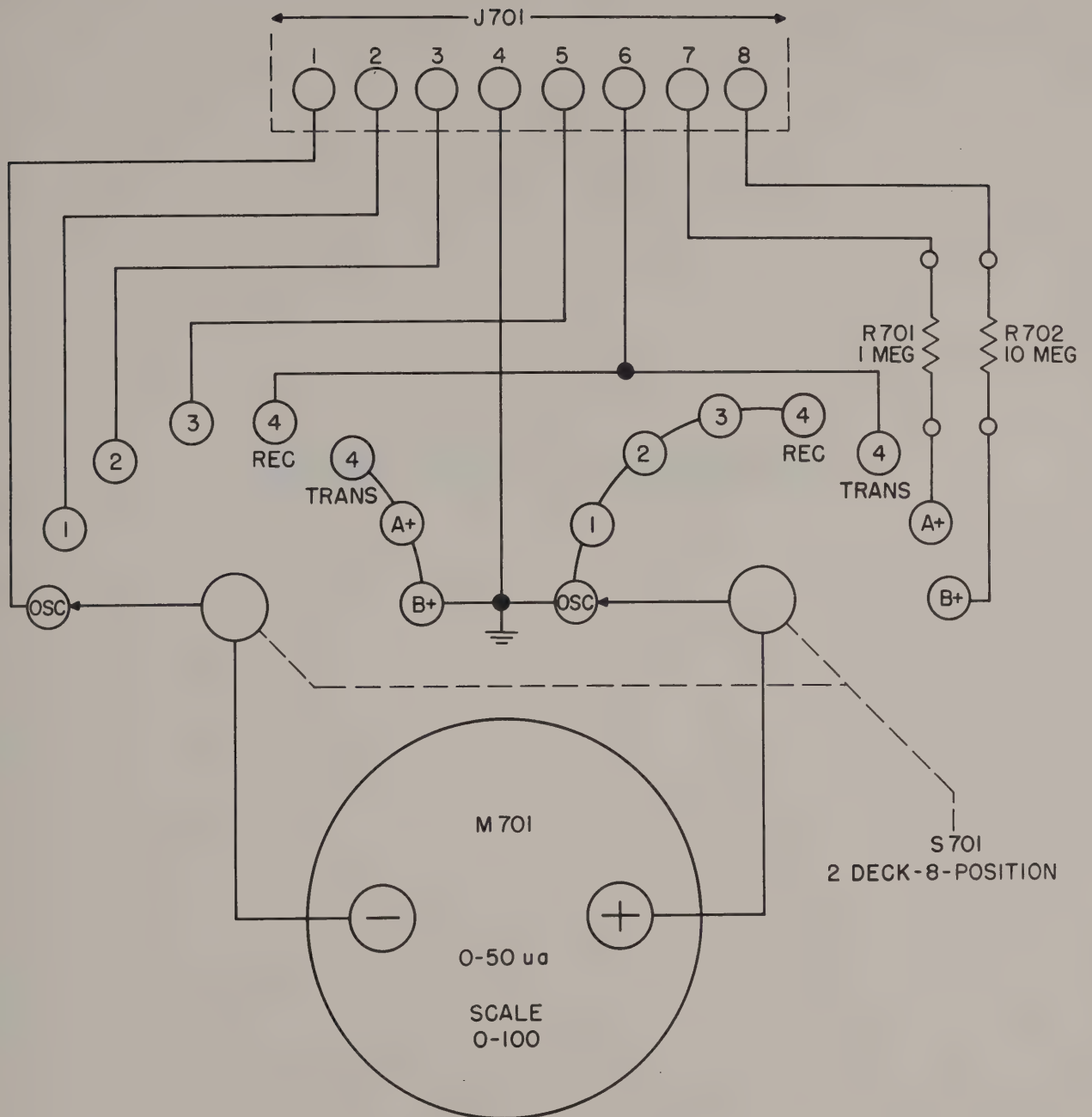


Figure 7-3. Test Unit TS-178/ARM-1, Schematic Diagram

★
T.O. 33A1-3-3-11

HANDBOOK
OPERATION INSTRUCTIONS

RADIO TEST SET AN/ARM-1

(TAFET RADIO AND TELEVISION CO.)

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

Reproduction for non-military use of the information or illustrations contained in this publication is not permitted without specific approval of the issuing service (BuAer or USAF). The policy for use of Classified Publications is established for the Air Force in AFR 205-1 and for the Navy in Navy Regulations, Article 1509.

LIST OF REVISED PAGES ISSUED

INSERT LATEST REVISED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the current revision is indicated by a vertical line in the outer margins of the page.

* The asterisk indicates pages revised, added or deleted by the current revision.

ADDITIONAL COPIES OF THIS PUBLICATION MAY BE OBTAINED AS FOLLOWS:

USAF ACTIVITIES.—In accordance with Technical Order No. 00-5-2.

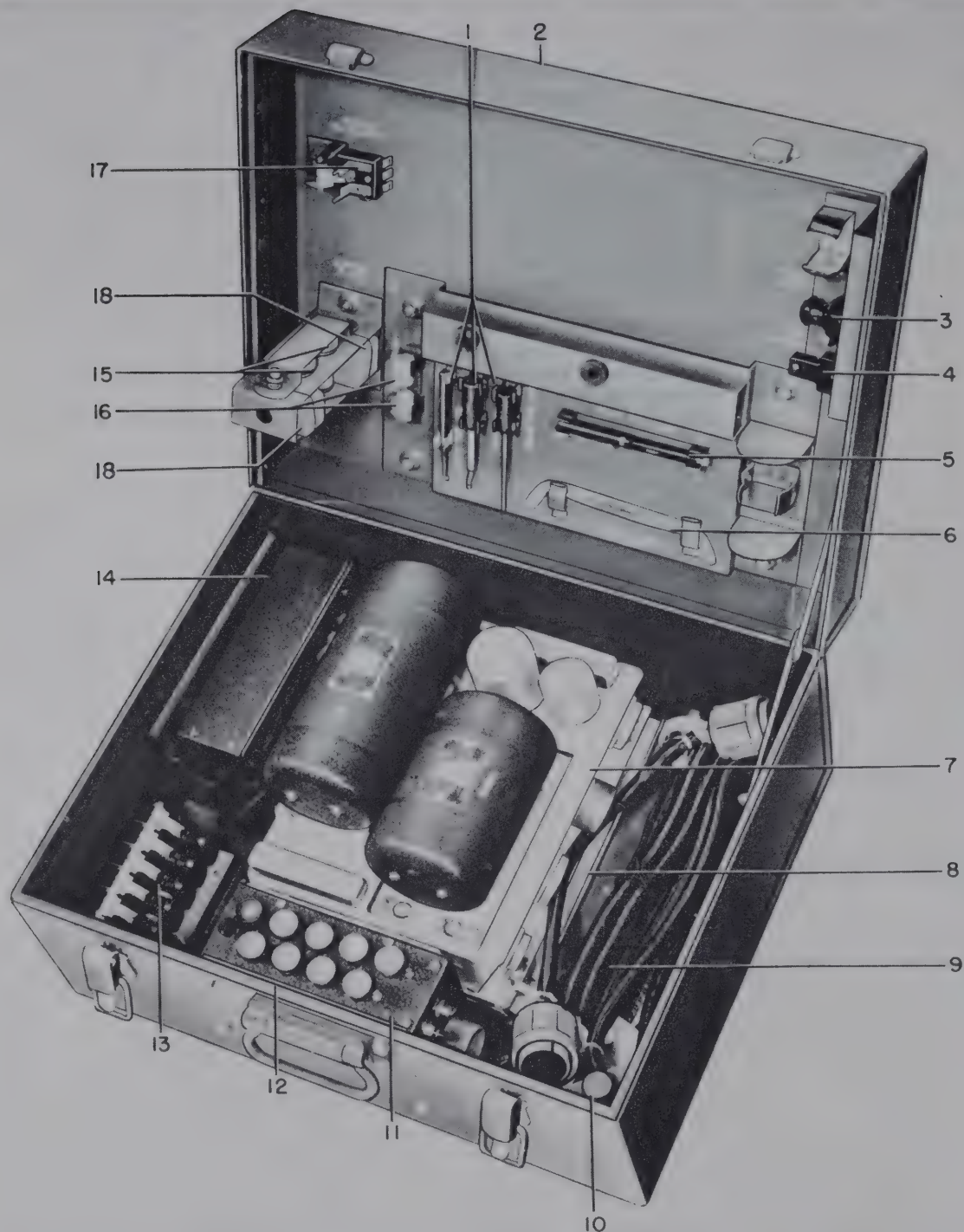
NAVAL ACTIVITIES.—Use Publications and Forms Order Blank (NavAer 2126) and submit to the nearest publications supply point listed below: NAS, Alameda, Calif.; NAS, Jacksonville, Fla.; NAS, Norfolk, Va.; NAS, San Diego, Calif.; NAS, Seattle, Wash.; NASD, ASO, Guam; NASD, Philadelphia, Pa.

For listing of available publications see Naval Aeronautic Publications Index (NavAer 00-500).

USAF

TABLE OF CONTENTS

Section		Page
I	GENERAL DESCRIPTION	1
	1-1. Purpose of Handbook	1
	1-3. Purpose of Equipment	1
	1-5. Description of Units.	1
	1-21. Supplementary Data	2
II	OPERATING PROCEDURES	3
	2-1. Preparation for Use	3
	2-4. Description of Controls	6
	2-6. Sequence of Operation	6
	2-9. Inspection Check of Radio Transmitter	6
	T-67/ARC-3	
	2-10. Alignment Check of Radio Transmitter	7
	T-67/ARC-3	
	2-11. Alignment of Transmitter T-67/ARC-3	7
	2-12. Inspection Check of Radio Receiver	9
	R-77/ARC-3	
	2-13. Alignment of Radio Receiver R-77/ARC-3.	9
III	OPERATING CHECKS AND ADJUSTMENTS	11
IV	EMERGENCY OPERATION	11



- | | |
|----------------------------------|---------------------------------|
| 1. Relay maintenance tools | 10. Alignment Tool MX-174/ARM-1 |
| 2. Chest CY-146/ARM-1 | 11. Control Box C-118/ARC-3 |
| 3. Shorting Plug U-30/ARM-1 | 12. Mounting FT-240A |
| 4. Shunting Unit MX-294/ARM-1 | 13. Crystal Units CR-1A/AR |
| 5. Relay contact burnisher | 14. Test Unit TS-178/ARM-1 |
| 6. Tuning Wand MX-173/ARM-1 | 15. Adapters PL-272 |
| 7. Power Junction Box J-68/ARC-3 | 16. Caps MX-506/ARM-1 |
| 8. Mounting Base MT-236B/ARC-3 | 17. Adapter MX-293/ARM-1 |
| 9. Interconnection cords | 18. Fuses (spare) |

Figure 1-1. Radio Test Set AN/ARM-1, Interior View

SECTION I
GENERAL DESCRIPTION

1-1. PURPOSE OF HANDBOOK.

1-2. This handbook contains instructions on the operation of the RADIO TEST SET AN/ARM-1 (figure 1-1) USAF Stock No. 7CAC-801319-2542. The equipment is manufactured by Taffet Radio and Television Company, New York, N. Y.

1-3. PURPOSE OF EQUIPMENT.

1-4. The test set is designed for use in the alignment, testing and maintenance of Radio Set AN/ARC-3. The test set is portable but not designed for operation during flight. Table I lists all the units which are part of the radio test set.

1-5. DESCRIPTION OF UNITS.

1-6. CHEST CY-146/ARM-1. The steel chest contains all the units of the radio test set. A folding type handle is located on the front of the chest (figure 1-1).

1-7. MOUNTING BASE MT-236B/ARC-3. The power junction box mounting base (figure 1-2) is fastened to the bottom of Chest CY-146/ARM-1. The mounting base is rectangular in shape and has a shock absorber mount and a snapslide stud in each corner. Two grounding straps are mounted on the base.

1-8. POWER JUNCTION BOX J-68/ARC-3 or J-68A/ARC-3. Fastened to the Mounting Base MT-236/ARC-3 with four snapslides, is the power junction box as shown in figure 1-2. Located on the top surface of the junction box chassis are two dynamotors, four fuses, and two filter chokes. Four receptacles located on the panel of the chassis are used to connect the junction box to the battery, transmitter, control box, and the receiver.

NOTE

Either Power Junction Box J-68/ARC-3 or Power Junction Box J-68A/ARC-3 may be supplied as part of the test set. The units are interchangeable. The only difference is that bayonet type fuseholders are used in J-68A/ARC-3 instead of the cartridge type fuse holders with covers used in J-68/ARC-3.

1-9. CONTROL BOX C-118/ARC-3. The front panel of the control box (figure 1-3) contains eight red pushbuttons lettered from A through H, a black pushbutton lettered OFF, and a small unmarked pushbutton. The OFF pushbutton cannot be depressed unless it is simultaneously depressed with the unmarked pushbutton. The letters on each pushbutton are filled with a fluor-

escent material. A receptacle, two jacks, and a push-button switch are located on the end of the control box. The jack marked TEL is for the headset connection, and the jack marked MIC is for the microphone connection. The receptacle marked U16/U is the power junction box connection. The switch marked TONE is not used in aligning Radio Set AN/ARC-3. It is used as a key during modulated continuous wave operation.

1-10. MOUNTING FT-240-A. The mounting (figure 1-3) is flat and has a rolled edge. The opposite end has two studs mounted on two extensions. The mounting is used for anchoring the control box.

1-11. TEST UNIT TS-178/ARM-1. The test unit (figure 1-4) contains a panel type meter, whose scale reads from 0 to 100. Directly below is an eight position selector switch marked OSC, 1, 2, 3, 4 REC, 4 TRANS, A+, B+. Supplied with the test unit is an interconnecting cable.

1-12. ADAPTER PL-272. The adapter connects the output of the Signal Generator I-96-A to the ANTENNA receptacle on the front panel of the Radio Receiver R-77/ARC-3.

1-13. ADAPTER MX-293/ARM-1. The adapter consists of contact clips mounted on an insulated base for the purpose of connecting the signal generator output to the grid of the first detector tube. The clips are formed in such manner that when the adapter is installed on the four-gang variable capacitor frame of the radio receiver, contact is made with the grid pin of tube JAN-9001 (V209).

1-14. SHORTING PLUG U-30/ARM-1. The plug has a five-prong base designed to replace relay K201 in the socket of the receiver during the alignment procedure. Pin No. 2 and pin No. 4 of the plug are connected together so that when it replaces the relay it shorts the contacts normally connected to the tuning relay.

1-15. SHUNTING UNIT MX-294/ARM-1. The shunting unit consists of a capacitor and a resistor housed in a bakelite plug. Attached are two clip connectors for connection to the i-f transformer terminals. The unit is used to prevent detuning effects during the alignment of the receiver i-f stages.

1-16. ALIGNMENT TOOL MX-174/ARM-1. The alignment tool is an insulated screwdriver which is used to reduce body capacity to a minimum when aligning Radio Set AN/ARC-3.

1-17. TUNING WAND MX-173/ARM-1. The tuning wand is made of clear plastic. Imbedded in one end

is a powdered iron slug and the other end has a copper slug. The wand is used to determine the resonant condition of various circuits.

1-18. RELAY MAINTENANCE TOOLS. Three relay-contact forming tools and a relay burnishing tool are supplied as part of the test set.

1-19. CRYSTAL UNIT CR-1A/AR. The crystal units consist of a thin quartz plate housed in a bakelite holder, with plug terminals. The crystal units are used to select various frequencies in the transmitter and the receiver.

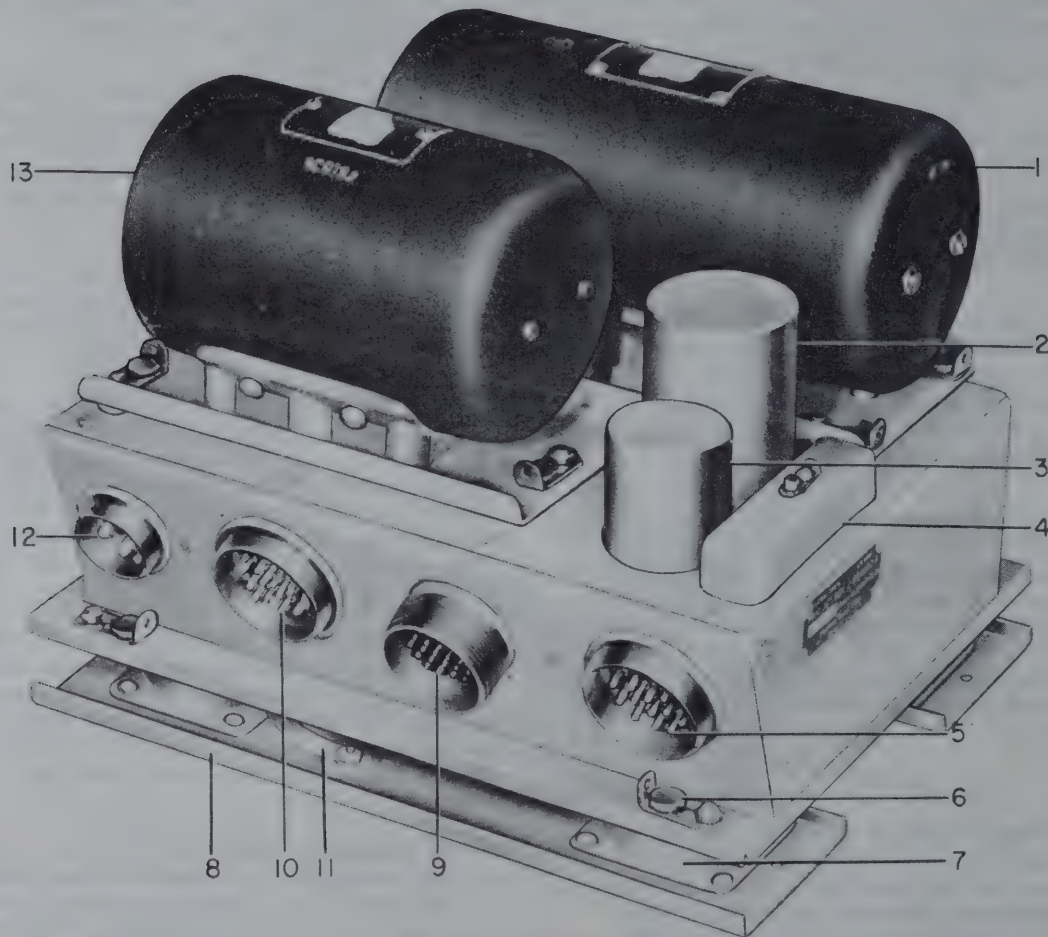
1-20. CAP MX-506/ARM-1. The cap is threaded to fit the motor switch buttons. When the receiver or the transmitter top covers are removed, the cap is used to hold the motor switch closed. This will enable normal tuning operation.

1-21. SUPPLEMENTARY DATA.

1-22. FREQUENCY RANGE. Supplied with the test set are six Crystal Units CR-1A/AR. They are used in Radio Set AN/ARC-3 so that it can be tested throughout the frequency range of 100 to 156 megacycles.

1-23. POWER REQUIREMENTS. An input voltage of 28-volts dc plus or minus 1/2 volt must be provided for the test set. When Power Junction Box J-68/ARC-3 is connected to Radio Set AN/ARC-3 the current drain of the test set will be 5.5 amperes when the Radio Receiver R-77/ARC-3 is operating, and 12 amperes when Radio Transmitter T-67/ARC-3 is operating. No power is consumed by any other assembly of the test equipment from the input voltage source.

1-24. EQUIPMENT SUPPLIED. The equipment supplied is listed in table I.



1. Dynamotor DY-21/ARC-3
2. Coil L402
3. Coil L403
4. Fuse cover
5. Receiver receptacle
6. Snapslide assembly
7. Shock mount

8. Mounting Base MT-236B/ARC-3
9. CONTROL BOX receptacle
10. TRANSMITTER receptacle
11. Grounding strap
12. BATTERY receptacle
13. Dynamotor DY-22/ARC-3

Figure 1-2. Power Junction Box J-68/ARC-3 on Mounting Base MT-236B/ARC-3

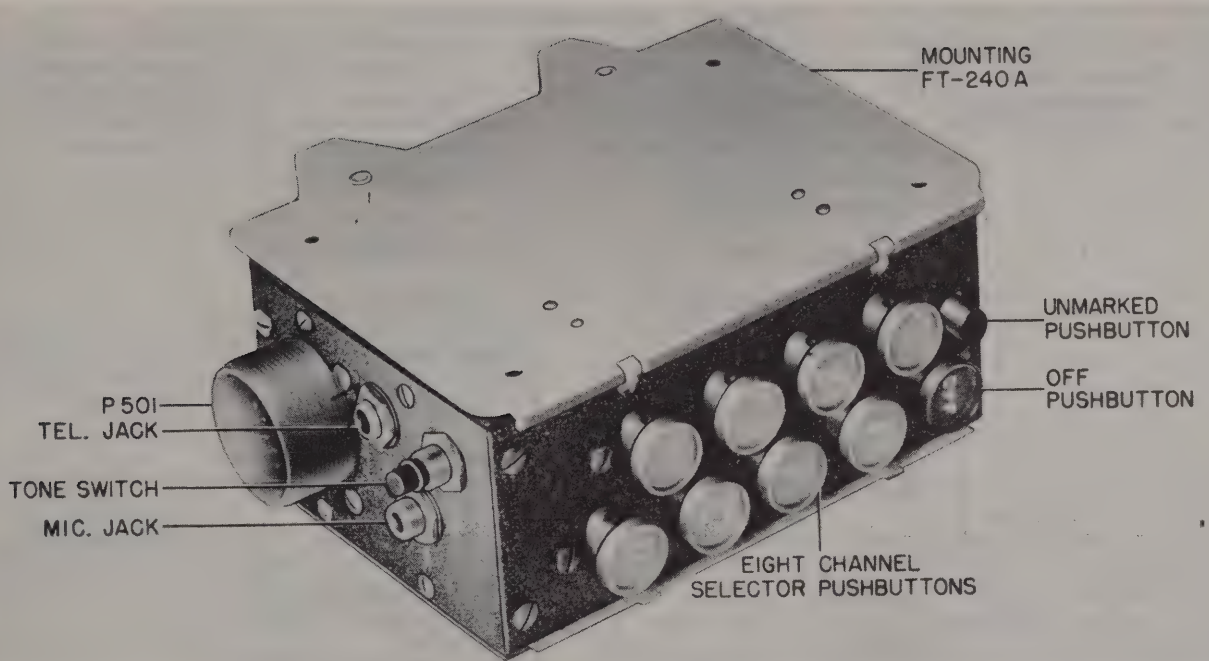


Figure 1-3. Control Box C-118/ARC-3

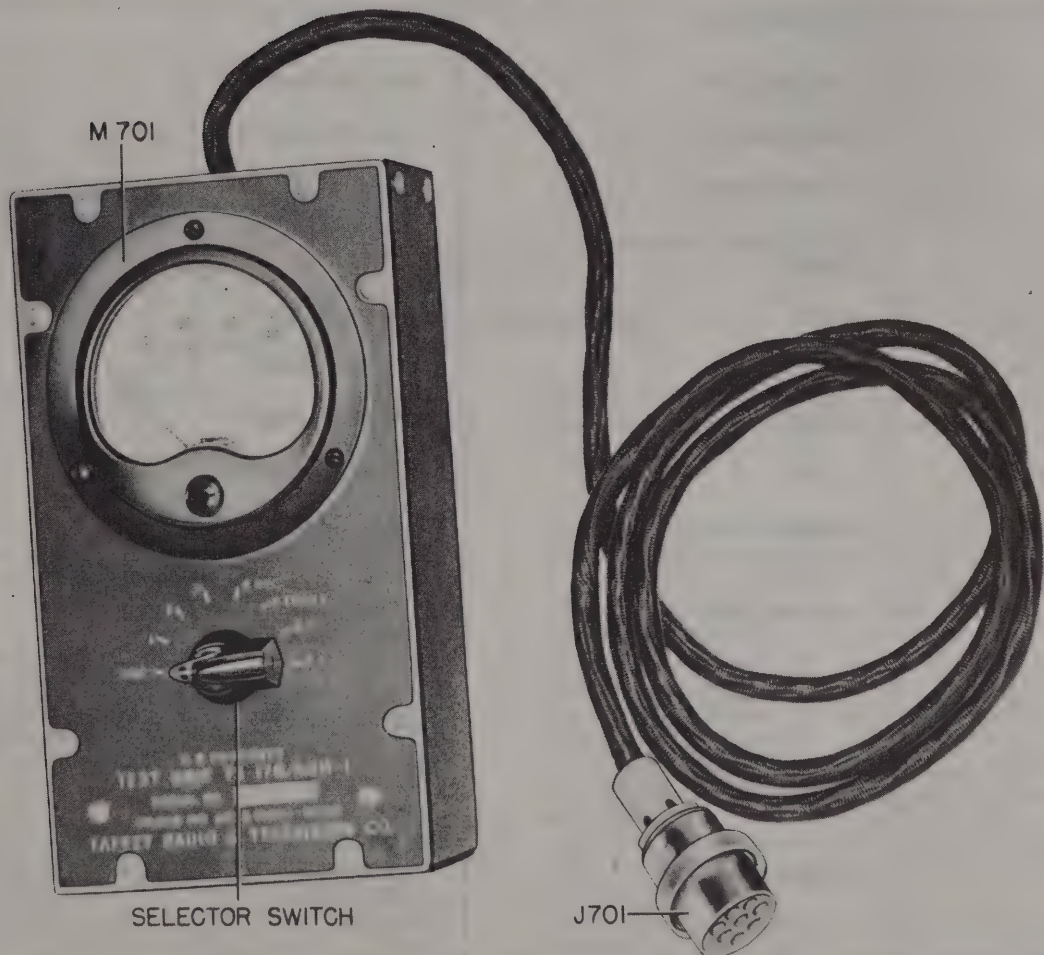


Figure 1-4. Test Unit TS-178/ARM-1

TABLE I. EQUIPMENT SUPPLIED

Quantity per Equipment	Name of Unit	AN Type Designation	Numerical Series of Ref Symbols
1	Power Junction Box, without mounting base, plugs or dynamotors	J-68/ARC-3 or J-68A/ARC-3	401-499
1	Dynamotor Unit	DY-21/ARC-3	
1	Dynamotor Unit	DY-22/ARC-3	
1	Mounting Base	MT-236B/ARC-3	
1	Control Box without mounting or plugs	C-118/ARC-3	501-599
1	Mounting	FT-240-A	
1	Chest	CY-146/ARM-1	701-799
1	Test Unit	TS-178/ARM-1	
2	Adapter	PL-272	
1	Adapter	MX-293/ARM-1	
1	Shorting Plug	U-30/ARM-1	
1	Shunting Unit	MX-294/ARM-1	
1	Alignment Tool	MX-174/ARM-1	
1	Tuning Wand	MX-173/ARM-1	
1	Set of Relay Maintenance Tools		
1	Cord	CX-214/ARM-1	
1	Cord	CX-215/ARM-1	
1	Cord	CX-216A/ARM-1	
1	Cord	XC-217/ARM-1	
1	Crystal Unit	CR-1A/AR (5555.555kc)	
1	Crystal Unit	CR-1A/AR (6944.444kc)	
1	Crystal Unit	CR-1A/AR (8000.000kc)	
1	Crystal Unit	CR-1A/AR (8100.000kc)	
1	Crystal Unit	CR-1A/AR (8458.823kc)	

TABLE I. EQUIPMENT SUPPLIED (cont)

Quantity per Equipment	Name of Unit	AN Type Designation	Numerical Series of Ref Symbols
1	Crystal Unit	CR-1A/AR (8727.000kc)	
2	Spare Fuse Kit		
2	Cap	MX-506/ARM-1	

1-25. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

The equipment required but not supplied is listed in table II.

TABLE II. EQUIPMENT REQUIRED BUT NOT SUPPLIED

Quantity per Equipment	Name of Unit	AN Type Designation	Required Characteristics
1	Phantom Transmitter Antenna with kit of spare lamps	TS-78/U (A-85-A)	Approximate load of normal antenna
1	Signal Generator	I-96-A	
1	Output Meter		0-20 Volts

SECTION II**OPERATING PROCEDURES****2-1. PREPARATION FOR USE.****WARNING**

Operation of this equipment involves the use of high voltages which are dangerous to life. Operating personnel must observe all safety precautions.

2-2. INTERCONNECTING CORDS. Ordinarily, the equipment is supplied with the cords plugged into the units of the radio test set. If the cords are not inserted, make the connections as follows:

a. Insert one end of Cord CX-217/ARM-1 into the Power Junction Box J-68/ARC-3 receptacle marked PL-148A.

b. Cord CX-216A/ARM-1 has a single plug on one end marked U-15/U, while the other end has two plugs marked U-15/U and PL-151A. Insert the end with the single plug into the power junction box receptacle marked U-15/U.

c. Insert one end of Cord CX-215/ARM-1 into the power junction box receptacle marked PL-153A.

d. Insert one end of Cord CX-214/ARM-1 into the

power junction box receptacle marked U-16/U, and the other end in the Control Box C-118/ARC-3 receptacle marked U-16/U.

2-3. INTERCONNECTION OF RADIO TEST SET AN/ARM-1 WITH ASSEMBLIES OF RADIO SET AN/ARC-3. To align Radio Transmitter T-67/ARC-3 and Radio Receiver R-77/ARC-3 of Radio Set AN/ARC-3, interconnect the radio test set as follows:

a. Insert the free end of Cord CX-215/ARM-1 into the receptacle marked PL-153A on the front panel of the radio receiver. If the radio transmitter is the only unit to be tested, this cord need not be connected.

b. Insert the two-plug end of Cord CX-216/ARM-1 into the radio transmitter receptacles marked U-15/U and PL-151A. If the PL-151A receptacle is covered with a black bakelite cap remove it. If the radio receiver is the only unit to be tested, this cord need not be connected.

c. Remove Test Unit TS-178/ARM-1. If the radio receiver is to be aligned, insert the test unit plug in the radio receiver receptacle marked PL-152. This receptacle is located underneath the top cover of the radio receiver. If the radio transmitter is to be

aligned, insert the test unit plug in the receptacle marked PL-152 on the front panel of the radio transmitter. If this receptacle is covered with a red bakelite cap, remove it.

WARNING

Make sure the OFF pushbutton on Control Box C-118/ARC-3 is depressed before making the following connections.

d. Connect the white covered wire of Cord CX-217/ARM-1 to the positive terminal of a 28-volt dc supply. The white-black tracer is the ground and must be connected to the negative terminal of the 28-volt d-c supply.

2-4. DESCRIPTION OF CONTROLS.

2-5. The following controls are used in the operation of the radio test set.

a. Pushbuttons A through H (figure 1-3) are used to select various channels in the Radio Receiver R-77/ARC-3, and in the Radio Transmitter T-67/ARC-3.

b. The OFF button (figure 1-3), when depressed, will stop the equipment. It must be depressed simultaneously with the small unmarked pushbutton located next to the OFF pushbutton.

c. The small unmarked pushbutton (figure 1-3) is used to lock the OFF pushbutton in the on position.

d. The TONE switch (figure 1-3) is used as a key during modulated-continuous-wave operation.

e. The selector switch (figure 1-4) is used to select various scales on the test unit. The scales indicate voltage and current readings of the radio transmitter and the radio receiver.

2-6. SEQUENCE OF OPERATION.

NOTE

The items identified by reference symbols in paragraphs 2-8 through 2-20 are located on the Radio Transmitter T-67/ARC-3 and Radio Receiver R-77/ARC-3. Descriptions of these controls are given in the applicable handbooks.

CAUTION

When the set has been turned off wait at least one minute before turning on again. Do not release the pushbuttons or depress the OFF pushbutton while the set is cycling.

2-7. STARTING EQUIPMENT. Depress any one of the eight, red, channel selector pushbuttons, marked A through H, which are located on the front panel of Control Box C-118/ARC-3 (figure 1-3). This automatically releases the OFF button and applies power to the radio test set and the Radio Set AN/ARC-3. A period of 30 seconds should then be allowed for warm-up, during which time the tuning motors on Radio Transmitter T-67/ARC-3 and Radio Receiver R-77/ARC-3 will begin to operate. When these tuning motors stop, the equipment is ready for operation.

2-8. TO STOP THE EQUIPMENT. Depress the black OFF pushbutton (figure 1-3) and the small unmarked lock pushbutton simultaneously.

NOTE

The equipment may be stopped after performing one or a combination of the necessary operations described in paragraphs 2-9 through 2-20.

2-9. INSPECTION CHECK OF RADIO TRANSMITTER T-67/ARC-3. Check the operation of Radio Transmitter T-67/ARC-3 by following the procedure outlined below:

a. Interconnect Radio Test Set AN/ARM-1 and the radio transmitter, as outlined in paragraphs 2-3 of this section.

b. Insert the plug of a microphone, with a push-to-talk switch, in the MIC jack (figure 1-3) on the Control Box C-118/ARC-3 of the radio test set.

c. Insert the plug of Test Unit TS-178/ARM-1 in the receptacle marked PL-152 on the radio transmitter.

d. Attach Phantom Transmitter Antenna TS-78/U (A-85-A) to the ANTENNA receptacle on the front panel of the radio transmitter.

e. Open the crystal compartment door on the radio transmitter and insert Crystal Units CR-1A/AR in sockets A, B, and C.

f. If the top cover of the radio transmitter has been removed, screw the Cap MX-506/ARM-1 over the motor control switch S102, located on a bracket near the tuning motor.

g. Depress pushbutton A, B or C on the Control Box C-118/ARC-3 (figure 1-3). Allow the equipment to warm up until the motor stops.

h. Turn the selector switch on Test Unit TS-178/ARM-1 to A+ (figure 1-4). With the switch in this position the meter reads 50 volts full scale. Since the input voltage is 28 volts, the correct meter reading of the test unit is 56.

i. Press the microphone push-to-talk button. Turn the selector switch to B+. In this position the test unit meter reads 500 volts full scale. Since the B voltage is approximately 400 volts, the correct meter reading is 80.

j. Open the crystal compartment door and replace the crystal in channel A with crystal unit marked 8458.823 kc. Then close the crystal compartment door and depress the red channel-selector pushbutton marked A. This operation will tune the equipment to 152 megacycles.

k. Press the microphone push-to-talk button. Then turn the selector switch on the test unit (figure 1-4) to the OSC position. The test unit meter reading must be between 20 and 70.

l. Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position 1. The test unit meter reading must be between 25 and 90.

m. Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position 2. The test unit meter reading must not be less than 25. Slowly insert each end of Tuning Wand MX-173/ARM-1 into 2nd harmonic generator grid coil, L105. The maximum meter reading must not be more than twice the reading obtained without using the tuning wand.

n. Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position 3. The test unit meter reading must not be less than 25. Slowly insert each end of the tuning wand into the 2nd harmonic generator plate coil L106. The maximum

meter reading must not be more than twice the reading obtained without using the tuning wand.

o. Press the microphone push-to-talk button. Then turn the selector switch of the test unit to position 4 TRANS and observe the test unit meter reading. Slowly insert each end of the tuning wand into the power amplifier coil L109. The minimum meter reading must not be more than eight below the original reading.

NOTE

A deviation in any of the above readings indicates that the circuit involved requires alignment (as given in paragraph 2-11) and/or repair.

2-10. ALIGNMENT CHECK OF RADIO TRANSMITTER T-67/ARC-3. If erratic operation of the Radio Transmitter T-67/ARC-3 is evident, check the alignment of the radio transmitter by following the procedure outlined below.

a. Interconnect Radio Test Set AN/ARM-1 and the radio transmitter as outlined in paragraphs 2-2 and 2-3 of this section.

b. Connect other equipment as outlined in subparagraphs 2-9a through 2-9e of this section. Cap MX-506/ARM-1 must not be installed.

c. The test equipment crystal unit used for channel A should be marked 8458.823 kc for the following procedure steps:

d. Depress channel-selector pushbutton A on the control box (figure 1-3) and hold down the motor control switch S102 until the tuning motor stops. If dial O101, located on top of the variable capacitor, does not stop at 152 megacycles but goes to C, refer to complete alignment instructions given in paragraph 2-11 of this section.

e. Turn the selector switch of the test unit to position 1. Depress the channel-selector pushbutton B. Immediately thereafter, depress the channel-selector pushbutton A. Tune the radio transmitter for the maximum reading on the test unit meter (figure 1-4), by turning the knurled knob on top of the tuning motor B101.

f. Turn the selector switch of the test unit to position 2 and depress the push-to-talk button. Slowly insert each end of Tuning Wand MX-173/ARM-1, into the field of tank coil L105 mounted on the top front variable capacitor. If the test unit meter reading increases by more than 5 divisions, use the insulated alignment Tool MX-174/ARM-1 and adjust the green screw marked 2 for the maximum obtainable reading.

g. Turn the selector switch of the test unit to position 3 and depress the push-to-talk button. Slowly insert each end of the tuning wand into the field of the tank coil L106 mounted on the bottom rear variable capacitor. If the test unit meter reading increases by more than 3 divisions, adjust the green screw marked 3 for the maximum obtainable reading.

h. Screw Cap MX-506/ARM-1 over the motor control button S102 so that the button is locked down. Depress pushbutton B and immediately afterward depress pushbutton A.

i. Remove Phantom Transmitter Antenna TS-78U (A-85-A) from the ANTENNA receptacle and turn the selector switch on the test unit to position 4 TRANS.

Depress the push-to-talk button and slowly insert each end of the tuning wand into the field of tank coil L109 mounted on the top rear variable capacitor. If the meter reading does not decrease more than four divisions, no further adjustment is necessary.

CAUTION

Do not disturb either the position of the antenna load adjustment screw (located between power amplifier tube JAN-832A (V104) and the top rear variable capacitor) or the setting of capacitor C130 located on the top rear variable capacitor.

j. If the test unit meter reading decreases by more than four divisions, adjust the green screw marked 4T of the radio transmitter, for the minimum meter reading (with the screwdriver removed) as observed when the tuning wand is used.

k. Reattach the phantom antenna. Depress the channel-selector pushbutton B (figure 1-3) and immediately depress pushbutton A. Remove the phantom transmitter antenna again. Check the reading on position 4 TRANS (figure 1-4) while the push-to-talk button of the microphone is depressed. If the reading is more than three divisions higher than that obtained previously in subparagraph 2-9n, repeat the procedure outlined in subparagraphs j and k preceding.

2-11. ALIGNMENT OF RADIO TRANSMITTER T-67/ARC-3. If, as a result of the alignment check outlined in paragraph 2-10 of this section, alignment is necessary, follow the procedure outlined below. Alignment should be attempted only by qualified personnel.

a. Interconnect the radio test set and the Radio Transmitter T-67/ARC-3 as outlined in paragraphs 2-2 and 2-3 of this section.

b. Connect the other equipment as outlined in paragraphs 2-9a through 2-9e of this section. Cap MX-506/ARM-1 must not be installed.

c. Open the crystal compartment door and remove all crystals from the radio transmitter. Then insert the 100-megacycle test equipment crystal marked 5555.555 kc in channel A; the 125-megacycle test equipment crystal marked 6944.444 kc in channel F; the 152-megacycle test equipment crystal marked 8458.823 kc in channel G. Close the crystal compartment door.

d. Depress the red channel-selector pushbutton marked G (152 megacycles) located on the control box (figure 1-3). Depress the motor control switch S102 until the dial O101, located on top of the variable capacitor, approaches the 152-megacycle mark. Then, by turning the knurled knob on top of motor B101, manually tune to the exact 152 megacycle mark on the dial. If the knurled knob does not rotate the dial, depress any other channel pushbutton and immediately depress the channel G pushbutton. Tune manually once again. Allow radio transmitter to warm up for five minutes before proceeding with steps e through n.

e. Turn the selector switch on the Test Unit TS-178/ARM-1 to the OSC position. The meter must read between 20 and 70.

f. Turn the selector switch on the test unit to position 1 (1st harmonic grid). Using Alignment Tool MX-174/ARM-1, adjust the green screw, marked 1, located on the variable capacitor of the radio transmitter, underneath the chassis nearest the front, for maximum reading on the test unit meter (25 to 90).

g. Turn the selector switch on the test unit to position 2 (2nd harmonic grid). Adjust the green screw marked 2, located on the variable capacitor on top of the chassis nearest the front of the radio transmitter for maximum reading on the test unit meter (25 to 90). Care must be taken to adjust the screw so that the meter will read the maximum with the alignment tool removed.

h. Turn the selector switch on the test unit to position 3 (power amplifier grid). Adjust the green screw marked 3, located on the variable capacitor underneath the chassis nearest the back of the radio transmitter, for maximum reading on the test unit meter.

i. Turn the selector switch on the test unit to position 4 TRANS. Adjust the green screw marked 4T, located on the top rear variable capacitor of the radio transmitter, for the minimum reading on the test unit meter. Maximum brilliancy of lamps in the phantom transmitter antenna should occur simultaneously. Care should be taken to adjust the screw so that the meter will read the minimum with the alignment tool removed.

j. Depress the channel-selector pushbutton A (100 megacycles). Hold the motor control switch S102 down until the 100-megacycle mark on the dial is approached. Then, by turning the knob on top of the motor, manually tune to the exact 100-megacycle mark on the dial. If the motor control knob does not rotate the dial, depress any other channel-selector pushbutton and immediately depress the channel A pushbutton. Tune manually once again.

k. Turn the selector switch on the test unit to position 1. Loosen the screw marked OSC LOCK and adjust the oscillator plate coil iron core by turning the core screw until a maximum reading on the test meter is obtained.

l. Repeat the procedure outlined in subparagraph 2-11d.

m. With the test unit selector switch set to position 1, adjust the green screw marked 1 of the radio transmitter, for maximum reading on the test unit meter.

n. Repeat the steps outlined in subparagraphs 2-11j through 2-11m, until the maximum adjustment of either oscillator coil core or the green screw, marked 1, does not affect the maximum adjustment of the other.

o. Repeat the procedure outlined in subparagraph 2-11d.

p. Unscrew the capon the control tube potentiometer R124 and turn the potentiometer adjusting screw to its extreme counterclockwise position.

q. With the test unit selector switch turned to position 3, slowly tune Radio Transmitter T-67/ARC-3 manually toward the low frequency end of the dial. Set the tuning so that the meter on the test unit reads 10.

r. Slowly turn the potentiometer adjusting screw clockwise until the tuning control relay K103 releases, as evidenced by a click, and Transmitter Dynamotor Unit DY-21/ARC-3 stops.

s. To check the adjustment, manually tune back to resonance at 152 megacycles. Then slowly tune the

radio transmitter manually toward the low frequency end of the dial. Observe the meter reading at the point where tuning control relay K103 releases. The test unit meter should read between 8 and 12 at the point of release if the adjustment is correct.

t. Depress the channel G pushbutton (figure 1-3) and motor control switch S102 until the motor stops. The radio transmitter should now be set at 152 megacycles, as indicated by the dial calibration.

u. Turn the selector switch on the test unit to position 4 TRANS. Remove Phantom Transmitter Antenna TS-78/U and adjust the green screw marked 4T located on the top rear variable capacitor of the radio transmitter, for the minimum reading on the test unit meter. Adjust for the minimum reading when the screwdriver is removed. Replace the phantom transmitter antenna.

v. Depress the channel A pushbutton (figure 1-3) and the motor control switch S102. Hold the switch down until the motor stops. The radio transmitter should now be set at 100 megacycles, as indicated by the dial calibration.

w. Turn the selector switch on the test unit to position 4 TRANS. Remove the phantom transmitter antenna and check the tracking by slowly inserting, each end separately, the Tuning Wand MX-173/ARM-1, into the field of coil L109 of the radio transmitter. If the variation, as indicated by the test unit meter, toward minimum is greater than four divisions with the brass end of the tuning wand inserted, further adjustment of the potentiometer is necessary as outlined in the following.

x. Replace the phantom transmitter antenna and then depress the channel G pushbutton. Depress motor control switch S102 until the motor stops; then turn the control tube potentiometer adjusting screw to its extreme counterclockwise position. Depress any other channel pushbutton and immediately depress the channel G pushbutton. Turn the selector switch to position 1 on the test unit, and manually tune for the maximum reading on the test unit meter. Turn to position 3 on the test unit and manually tune the radio transmitter toward the low frequency end of the dial. Set the tuning so that the meter on the test unit reads 20. Slowly turn the potentiometer adjusting screw clockwise until relay K103 releases. Repeat the steps outlined in the above subparagraphs 2-11t through 2-11v, to check the tracking at 100 megacycles.

y. If the variation toward minimum is still greater than four divisions, as indicated by the test unit meter, with the brass end of the tuning wand inserted, repeat the procedure in step x preceding, setting the release point of relay K103 at 30.

NOTE

The maximum grid drive to the final amplifier, as indicated by the test unit in position 3, must be greater than two times the reading obtained at the setting of the control tube potentiometer. Therefore, if it becomes necessary to adjust the potentiometer to 20 or 30, the maximum grid drive to the final amplifier must be greater than 40 or 60. If it is not, the potentiometer setting must be decreased accordingly.

z. Depress the channel F pushbutton (figure 1-3) and

motor control switch S102. Hold the switch down until the motor stops. The radio transmitter must now be set up at 125 megacycles as indicated by the dial calibration.

aa. Adjust the trimmer capacitor C130 for the maximum brilliancy on the lamps of the phantom transmitter antenna.

ab. Loosen the locking nut on the antenna load adjustment.

ac. Turn the selector switch on the test unit to position 4 TRANS and set the antenna load adjustment for the maximum load as indicated by the maximum reading on the test unit meter.

ad. Back off the coupling two divisions on the meter, or to a reading of 75, whichever is lower.

ae. Tighten the locking nut on the antenna load adjustment.

af. The radio transmitter should now be properly aligned.

2-12. INSPECTION CHECK OF RADIO RECEIVER R-77/ARC-3. Check the operation of Radio Receiver R-77/ARC-3 following the procedure outlined below:

a. Interconnect Radio Test Set AN/ARM-1 and the radio receiver as outlined in paragraphs 2-2 and 2-3 of this section.

b. Open the crystal compartment door and insert a Crystal Unit CR-1A/AR of the radio test set in sockets A, B, and C if the original crystals used in the receiver were removed previously.

c. Set the thumbwheel for each of these channels to any harmonic of the crystal for that channel (11th through 18th harmonic).

d. Screw Cap MX-506/ARM-1 over motor control button S203 (adjacent to the PL-152 receptacle) so that the button is locked down.

e. Depress any channel selector pushbutton. Turn the selector switch on the test unit to the A+ position. With the switch in this position, the meter reads 50 volts full scale. Since the A voltage is 28 volts, the correct meter scale reading is 56. Turn the selector switch to the B+ position. In this position the meter reads 500 volts full scale. Since the B voltage is approximately 200 volts, the correct meter reading is 40.

f. Open the crystal compartment door of the radio receiver and remove all crystals from the crystal compartment. Insert the test equipment crystal, 8000.000 kc, in channel A. Insert the test equipment crystal, marked 8100.000 kc, in channel B. Insert the test equipment crystal, marked 8727.000 kc, in channel C. Insert the test equipment crystal, marked 8458.823 kc, in channel D. Close the crystal compartment door.

g. Depress the channel-selector pushbutton marked C, on Control Box C-118/ARC-3 (figure 1-3).

h. Turn the selector switch on Test Unit TS-178/ARM-1 to the OSC position. The meter reading should be approximately 50. Depress the channel-selector pushbutton marked A. The test unit meter reading must be between 8 and 14.

i. Turn the selector switch on the test unit to position 1. Depress channel-selector pushbuttons A, B, C, and D consecutively, allowing the equipment to tune to each of the channels selected. The test unit

meter must not read less than 40 on channels A, C, and D, and not less than 70 on channel B.

j. Turn the selector switch on the test unit to position 2, then set the frequency selector thumbwheel switch for channel A, located on the front panel of the radio receiver, to 156 megacycles. Depress channel selector pushbutton A. The test unit meter must not read less than 5.

k. Turn the selector switch on the test unit to position 3. The meter must not read less than 50. Set the thumbwheel for channel A to 100 megacycles, then depress any other channel pushbutton and immediately depress the channel A pushbutton again. The test unit meter must not read less than 40.

l. Turn the selector switch on the test unit to position 4 REC. In order to obtain a proper reading in this position, it is necessary to disconnect the screen of the first detector tube JAN-9001 (V209). Do this by inserting a tube with the screen pin (No. 6) clipped off close to the base. The test unit meter reading must not be less than 30.

NOTE

A deviation of any of the above readings indicates that alignment (as given in paragraph 2-13) and/or repair of the stage or section involved is necessary.

2-13. ALIGNMENT OF RADIO RECEIVER R-77/ARC-3.

2-14. If, as a result of the inspection check of the preceding paragraph, alignment of the radio receiver is necessary, follow the procedure outlined below.

2-15. PRELIMINARY. To prepare Radio Test Set AN/ARM-1 and Radio Receiver R-77/ARC-3 for the receiver alignment use the following procedure:

a. Equipment required, in addition to the radio test set, is a Signal Generator I-96-A or Ferris Type 18-C (with an accurate wavemeter) and an output meter 0 to 20 volts.

b. Interconnect the radio test set and the radio receiver, as outlined in paragraphs 2-2 and 2-3, this section.

c. Connect the output meter to the TEL jack on the control box of the radio test set or the LO terminal on the radio receiver output transformer, T206. If the output meter is to be connected to the control box, a suitable plug will also be required.

d. Clamp Adapter MX-293/ARM-1 to the bracket of the four-gang tuning capacitor so that the projection on the adapter extends through the U-shaped hole adjacent to the first detector tube JAN-9001 (V209) and contacts the lead to the grid pin on the tube.

NOTE

Make sure the projection on the adapter does not contact any other leads.

e. Connect the i-f test cord to the socket marked HIGH on the signal generator and connect the output terminals to the adapter making sure the polarity is correct.

2-16. I-F ALIGNMENT. To align the i-f stages of the receiver use the following procedure:

- a. Turn on and adjust the i-f signal generator to 12 megacycles and depress any channel pushbutton on the control box. Allow 45 seconds for the radio receiver to warm up.
- b. Adjust the signal generator output to the smallest value which will give a reading on the output meter. If no output is obtainable, turn all eight i-f transformer adjusting screws to the maximum counterclockwise position. Then roughly align each stage, feeding the input into the grids of the third, second, and first i-f tubes successively (tubes V212, V211, and V210).

NOTE

If a 12-megacycle crystal-controlled signal is not available, use Frequency Meter Set SCR-211 to adjust the signal generator frequency accurately to 12 megacycles.

- c. With the 12-megacycle input signal fed to the first detector grid, adjust the screw on top of fourth i-f transformer T205 for the maximum reading on the output meter.

d. Adjust the screw at the bottom of i-f transformer T205 for the maximum reading on the output meter. Continue to reduce the input from the signal generator to the smallest value which will give a workable reading on the output meter. Because of the AVC action, alignment cannot be performed with a high input.

- e. Connect Shunting Unit MX-294/ARM-1 across terminals 1 and 2 (toward the front of the chassis) on the third i-f transformer T204.

f. Adjust the screw on top of the transformer for the maximum reading on the output meter.

- g. Remove the shunting unit from terminals 1 and 2; then connect it across terminals 3 and 4 (toward the rear of the chassis) on the third i-f transformer T204.

h. Adjust the screw on the bottom of the transformer for the maximum reading on the output meter.

- i. Repeat the procedure outlined in subparagraphs 2-16e through 2-16h above, for T203, the second i-f transformer.

j. Remove the shunting unit from transformer T203 and connect it across terminals 1 and 2 (toward the inside of the chassis) on the first i-f transformer T202.

k. Adjust the screw on top of the transformer for the maximum reading on the output meter.

- l. Remove the shunting unit from terminals 1 and 2; then connect it across terminals 3 and 4 (toward the outside of the chassis) on the first i-f transformer T202. Adjust the screw on the bottom of the transformer for the maximum reading on the output meter.

m. Remove the shunting unit from the i-f transformer and remove from the variable capacitor the adapter clamped to it in paragraph 2-15d above.

2-17. CRYSTAL OSCILLATOR ALIGNMENT. To align the crystal oscillator of the receiver use the following procedure:

- a. Turn the adjusting screw on the bottom of the oscillator coil Z201 as far counterclockwise as possible.
- b. Open the crystal compartment door of Radio Receiver R-77/ARC-3 and remove all crystals from the

crystal compartment. Insert the Crystal Unit CR-1A/AR, marked 8727.000 kc, in channel A and depress the channel A pushbutton (figure 1-3).

- c. Turn the selector switch on Test Unit TS-178/ARM-1 to the OSC position. Then turn the oscillator coil adjusting screw clockwise until the meter on the test unit reads 50.

2-18. FUNDAMENTAL AMPLIFIER ALIGNMENT. To align the fundamental amplifier of the receiver use the following procedure:

- a. Turn all three adjusting screws, on top of fundamental amplifier transformer T201, to the maximum counterclockwise position.

b. Remove the crystal unit, marked 8727.000 kc, from channel A and insert the crystals marked 8000.000 kc, 8100.000 kc, 8727.000 kc, and 8458.823 kc in channels A, B, C and D respectively.

- c. Depress channel B pushbutton (figure 1-3).

d. Turn the selector switch on the radio test set to position 1.

e. Turn either of the two outside adjusting screws on top of the fundamental amplifier transformer T201 two or three turns in a clockwise direction. Then turn the other outside adjusting screw two or three turns in the same direction. Repeat these operations consecutively until the maximum meter reading is obtained.

NOTE

The above adjustment is very important. Be sure that a maximum reading is obtained on the meter by adjustment of these two screws before proceeding.

f. Without changing the above adjustment, turn the center adjusting screw on the fundamental amplifier transformer T201 clockwise until the maximum meter reading is obtained. The test unit meter must read between 70 and 90.

g. Check the test unit meter reading on channels A, B, C and D in succession. The meter must not read less than 40 on any channel. If any reading is less than 40, repeat the fundamental amplifier procedure described in subparagraphs 2-18 d, e and f preceding.

2-19. HARMONIC GENERATOR ALIGNMENT. To align the harmonic generator of the receiver use the following procedure:

- a. Insert Crystal Unit CR-1A/AR marked 8000.000 kc in channel A; then set the channel A thumbwheel of the radio receiver to position 156.

b. Depress channel A pushbutton on the radio test set control box (figure 1-3).

c. Depress motor control switch S-203 and hold it down until the motor stops. Observe whether the dial indicates 156 or END.

d. If the dial is near 156, remove plug-in relay K201 and insert Shorting Plug U-30/ARM-1 in the relay socket.

e. If the dial stops at END, remove plug-in relay K201. Depress channel B pushbutton and immediately depress channel A pushbutton. Hold down motor control switch S203 until the motor stops, then insert Shorting Plug U-30/ARM-1 in the relay socket.

f. Turn knurled knob on motor shaft until the frequency dial on the front panel of the radio receiver indicates 156.

NOTE

If the procedure in subparagraph 2-19e was necessary, the frequency dial must be turned in a counterclockwise direction to 156. The pointer at the end of the three-section variable capacitor should indicate the red portion of the cam, as the variable capacitor turns once for three revolutions of the calibrated dial.

g. Turn the selector switch on the test unit (figure 1-4) to position 3.

h. Adjust trimmer capacitors C219D and C219E for maximum reading on the test unit meter. Use the alignment tool provided with the radio test set.

i. Remove Shorting Plug U-30/ARM-1 and replace relay K201.

2-20. R-F ALIGNMENT. To align the r-f stage of the receiver, use the following procedure:

a. Insert a Crystal Unit CR-1A/AR marked 8000.000 kc in channel A; then set the channel A thumbwheel to position 156.

b. Connect the output meter to the TEL jack of the control box (figure 1-3).

c. Depress the channel B pushbutton (figure 1-3), then immediately depress channel A pushbutton.

d. Depress motor control switch S203 until the motor stops. The motor will stop when the frequency dial on the front panel of the radio receiver is just below position 156.

e. Connect the r-f output of Signal Generator I-96-A or I-130-A to the ANTENNA socket on the front panel of the radio receiver. Use Adapter PL-272 to make the connection. Tune the signal generator to 156 megacycles for the maximum reading on the output meter.

f. Adjust the trimmer capacitor C247E, C247F, C247G, C247H, and C219F for the maximum reading on the output meter. Repeat the adjustments until no further improvement can be obtained.

g. Set the channel A thumbwheel on the front panel of the radio receiver to 100 megacycles. Depress the channel B pushbutton and immediately depress the channel A pushbutton again. Depress the motor control switch S203 and see that the frequency dial stops at 100 megacycles.

h. If inaccurate tuning results, repeat each step of the r-f alignment procedure outlined in this paragraph.

SECTION III

OPERATING CHECKS AND ADJUSTMENTS

3-1. No operating checks and adjustments are required for the Radio Test Set AN/ARM-1.

SECTION IV

EMERGENCY OPERATION

4-1. No substitute methods of operation are required for the Radio Test Set AN/ARM-1.

★
T.O. 33A1-3-3-14

ILLUSTRATED PARTS BREAKDOWN

RADIO TEST SET AN/ARM-1

(TAFET RADIO AND TELEVISION CO.)

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

Reproduction for non-military use of the information or illustrations contained in this publication is not permitted without specific approval of the issuing service (BuAer or USAF). The policy for use of Classified Publications is established for the Air Force in AFR 205-1 and for the Navy in Navy Regulations, Article 1509.

LIST OF REVISED PAGES ISSUED

INSERT LATEST REVISED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the current revision is indicated by a vertical line in the outer margins of the page.

* The asterisk indicates pages revised, added or deleted by the current revision.

ADDITIONAL COPIES OF THIS PUBLICATION MAY BE OBTAINED AS FOLLOWS:

USAF ACTIVITIES.—In accordance with Technical Order No. 00-5-2.
NAVAL ACTIVITIES.—Use Publications and Forms Order Blank (NavAer 2126) and submit to the nearest publications supply point listed below: NAS, Alameda, Calif.; NAS, Jacksonville, Fla.; NAS, Norfolk, Va.; NAS, San Diego, Calif.; NAS, Seattle, Wash.; NASD, ASO, Guam; NASD, Philadelphia, Pa.
For listing of available publications see Naval Aeronautic Publications Index (NavAer 00-500).

USAF

TABLE OF CONTENTS

Section		Page
I	INTRODUCTION	1
II	GROUP ASSEMBLY PARTS LIST	3
	Figure 2. Radio Test Unit AN/ARM-1.	4
	Figure 3. Test Unit Assembly TS-178/ARM-1	6
	Figure 4. Control Box Assembly C-118/ARC-3	7
	Figure 5. Cord Assembly CX-214/ARM-1.	9
	Figure 6. Chest CY-146/ARM-1.	10
III	NUMERICAL INDEX	13
IV	REFERENCE DESIGNATION INDEX	17

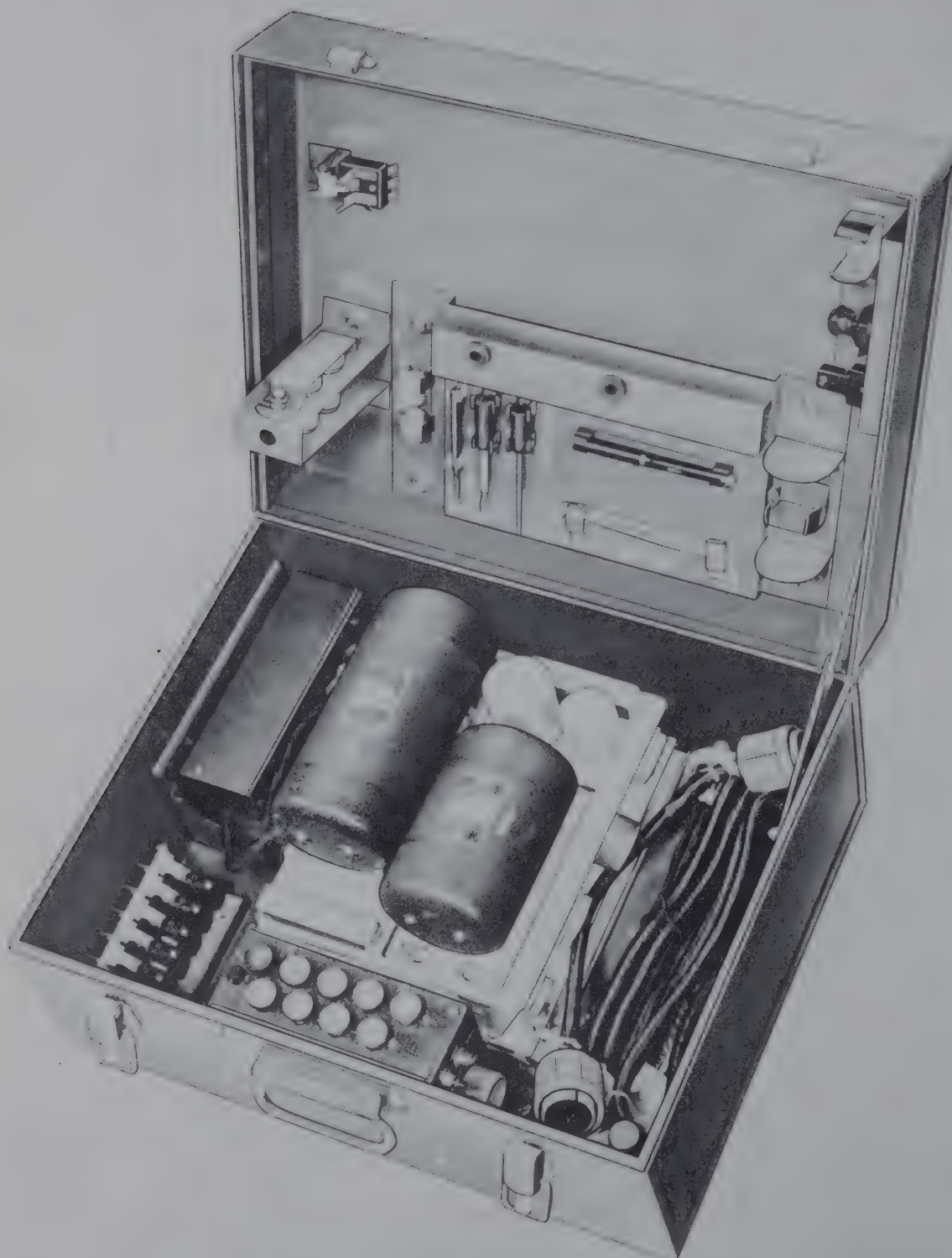


Figure 1. Radio Test Set, AN/ARM-1

SECTION I
INTRODUCTION

1-1. GENERAL.

1-2. This Illustrated Parts Breakdown lists and describes the parts for Radio Test Set AN/ARM-1; USAF Stock Number 7CAC 801319-2542; manufactured by Taffet Radio and Television Co., New York. This breakdown will be used for requisitioning, storing, and identifying parts.

1-3. GROUP ASSEMBLY PARTS LIST.

1-4. **GENERAL.** Section II, Group Assembly Parts List, consists of a breakdown of the complete unit into subassemblies and detailed parts. Each assembly is listed in its order of disassembly and is followed immediately by its component parts properly indented below it, to show their relationship to the assembly. Attaching parts are listed immediately following the parts which they attach.

1-5. **FIGURE AND INDEX NUMBER COLUMN.** In this column, the digits preceding the hyphen refer to the figure in the Parts Breakdown on which a part or assembly is illustrated. The digits following the hyphen are the index numbers of procurable and non-procurable parts and assemblies. Parts shown for reference purposes only are not given index numbers. The index numbers are numerically arranged in the Group Assembly Parts List and are used mainly to assist in locating a part in the Group Assembly Parts List after it has been found in the Numerical Index.

1-6. **PART NUMBER COLUMN.** In this column are listed either the Taffet part numbers which are the same as drawing numbers, AN(Air Force-Navy) standard parts numbers, or part numbers of vendors other than Taffet. If a part is purchased from a vendor other than Taffet the vendor's part number is listed in the part number column.

1-7. **DESCRIPTION COLUMN.** In this column is listed each assembly, its attaching parts, and components of the assembly, properly indented to show their relationship to the assembly. Parts purchased from vendors other than Taffet are so indicated by means of manufacturer's code symbols, or by the name and address of the vendor when no manufacturer's code symbol has been assigned.

1-8. **MANUFACTURER'S CODE SYMBOLS.** If a part is purchased from a vendor other than Taffet, the vendor's name and address is indicated in the description column by the following code:

CODE SYMBOL	VENDOR'S NAME AND ADDRESS
ATI	Atlantic India Rubber Works, Inc. Chicago, Ill.
COCI	Continental Carbon Inc. Cleveland, Ohio
DHM	Harry Davies Molding Co. Chicago, Ill.
EN	Elastic Stop Nut Corp. of America Union, N. J.

CODE SYMBOL VENDOR'S NAME AND ADDRESS

JBT	J-B-T Instruments, Inc. New Haven, Conn.
LTF	Littelfuse, Inc. Des Plaines, Ill.
MIPR	Miller Products Co. Inc. New York, N. Y.
MRQ	Minor Rubber Co. Inc. Bloomfield, N. J.
OAK	Oak Mfg. Co. Chicago, Ill.
SH	Shakeproof Inc. Chicago, Ill.
SSH	Stewart Stamping Corp. Yonkers, N. Y.
STL	Stackpole Carbon Co. St. Mary's, Pa.
SWIN	Switchcraft Inc. Chicago, Ill.
THAS	Thomas Associates Burbank, Calif.
TRP	Trico Products Corp. Buffalo, N. Y.
WE	Western Electric Co. New York, N. Y.

1-9. **UNITS PER ASSEMBLY COLUMN.** This column lists the quantity of assemblies or parts required in the immediately preceding assembly of which the given part or assembly is a component. The quantities specified, therefore, are not necessarily the total used per equipment. Refer to the Numerical Index, Section III, for the total quantities used per equipment. The letters "AR" denote that the selection of a part or parts should be made "as required". "REF" indicates that a part is not illustrated as an individual part but is included in the Group Assembly Parts List because it is necessary to show its relationship to procurable parts. "REF" also refers to an assembly which is completely assembled on a preceding illustration, and is now exploded on the illustration on which it is referenced. In this case the description has a notation which refers to the illustration on which the assembly is shown completely assembled and indexed.

1-10. **USABLE ON CODE COLUMN.** Part variations within the groups of equipment are indicated by a letter symbol immediately following the units per assembly in the "Usable on Code" column. In cases where the "Usable on Code" column has been left blank, parts listed apply to all the equipment covered by this book.

1-11. NUMERICAL INDEX.

1-12. **GENERAL.** The Numerical Index, Section III, is a list of part numbers arranged in an alphabetical-numerical sequence, to show usage by reference to applicable figure and index numbers and total quantity per equipment.

NOTE

Alphabetic O's are considered as numerical zeros.

1-13. PART NUMBER COLUMN. In this column are listed part numbers, which are the same as drawing numbers, for procurable parts and assemblies in the Group Assembly Parts List.

1-14. SOURCE CODE COLUMN. In this column is listed the source coding as supplied by the Procuring Department.

1-15. SOURCE CODE DEFINITIONS.

- P - Procured because of high usage. Local manufacture is permissible.
- P1 - Procured because of complexity. (Letter "O" following code "P" or "P1" indicates parts that are to be replaced at Depot (O&R) level only.)
- M - Manufacture locally because of low usage.
- M1 - Manufacture at Depot (O&R) level only.
- A - Assemblies of separately procured parts.
- A1 - Assemblies of separately procured parts which require Depot (O&R) level facilities for assembly.
- X - Parts considered impracticable to replace. (Need for these parts should normally result in retirement of the equipment.)
- X1 - Parts not available separately. Order next higher assembly.
- X2 - Parts not stocked nor required for normal maintenance. May be obtained through salvage or by special requisition through normal supply channels with supporting justification.
- * - Obsolete parts, or drawings, diagrams, and instructions which cannot be procured or manufactured.
- R - Applies to parts which are economical to salvage and economical to repair.
- S - Applies to parts which are economical to salvage, if usable, needing only cleaning, sandblasting, painting, plating, and/or inspection.
- N - Applies to parts which are uneconomical, or impracticable to salvage.

1-16. FIGURE AND INDEX NUMBER COLUMN. In this column the digits preceding the dash refer to the figure in the Parts Breakdown on which the parts or assemblies are illustrated. The digits following the dash are the index numbers for procurable parts or assemblies. For Government and contractor standard parts, the figure and index number shown in the

Numerical Index is the figure and index for the first occurrence only of such parts in the Group Assembly Parts List.

1-17. QUANTITY PER ARTICLE COLUMN. In this column is listed the total quantity of parts or assemblies per unit of equipment. Where the total quantity of a part is not the same for the different units of equipment covered by this Parts Breakdown, the largest quantity for any one unit is shown.

1-18. REFERENCE DESIGNATION INDEX.

1-19. GENERAL. The Reference Designation Index, Section IV, lists reference designation symbols which have been established for any parts of the equipment covered.

1-20. REFERENCE DESIGNATION COLUMN. In this column are listed the assigned reference designation symbols, arranged in alphabetical-numerical sequence. The column contains all reference designation symbols shown on schematic diagrams and text contained in Operating or Service Handbooks pertaining to the equipment covered by the Illustrated Parts Breakdown.

1-21. FIGURE-INDEX NUMBER COLUMN. This column contains the Group Assembly Parts List figure and index numbers assigned to reference designation items.

1-22. CLASS CODE OR STOCK NUMBER COLUMN. In this column are listed the class code or stock numbers, where assigned, for parts which have been assigned reference designation symbols. When the stock number of an item does not appear in the stock number column, reference should be made to the S-00-1 Master Numerical Index.

1-23. PART NUMBER COLUMN. In this column are listed the part numbers of those parts which have been assigned reference designation symbols.

1-24. HOW TO USE THIS PARTS BREAKDOWN.

1-25. FINDING ILLUSTRATION AND NOMENCLATURE WHEN PART NUMBER IS KNOWN. When a part number is known and it is desired to locate the illustration and proper nomenclature for the part, refer first to Section III, Numerical Index. Using the alphabetical-numerical arrangement, locate the part number in the list. Opposite the part number will be found the figure-index number which refers back to Section II, Group Assembly Parts List. The part will be illustrated on the referenced figure number in the Group Assembly Parts List, and may be located in the illustration by means of the index number.

1-26. WHEN THE PART NUMBER IS NOT KNOWN. When the part number is not known and it is desired to locate its number and nomenclature, first refer to the Table of Contents of the Parts Breakdown for the page number of the major assembly which illustrates the desired part. Then refer to Section II, Group Assembly Parts List, and identify the part on the illustration by its index number. The proper part number and nomenclature will be found immediately opposite the figure and index number in the listing for the illustration.

SECTION II
GROUP ASSEMBLY PARTS LIST

FIG. & INDEX NO.	PART NO.	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
		RADIO TEST SET AN/ARM-1		
2-	AN/ARM-1	TEST SET, RADIO T170-D7550	1	
-1	TS-178/ARM-1	. TEST UNIT ASSEMBLY, T170-D7454 (See figure 3 for breakdown)	1	
-2	C-118/ARC-3	. CONTROL BOX ASSEMBLY (T170-D7431) (See figure 4 for breakdown)	1	
-3	CX-214/ARM-1	. CORD ASSEMBLY (T170-D7413) (See figure figure 5 for breakdown)	1	
	CX-215/ARM-1	. CORD ASSEMBLY (T170-D7448) (See figure figure 5 for breakdown)	1	
	CX-216A/ARM-1	. CORD ASSEMBLY (T170-D7541) (See figure figure 5 for breakdown)	1	
	CX-217/ARM-1	. CORD ASSEMBLY (T170-D7543) (See figure figure 5 for breakdown)	1	
-4	DY-21/ARC-3	. DYNAMOTOR UNIT, GFP	1	
-5	DY-22/ARC-3	. DYNAMOTOR UNIT, GFP	1	
-6	CR-1A/AR	. CRYSTAL UNIT, (5555.555 RC) (MIL-C-16B) (T170-D7550-1)	1	
-7	CR-1A/AR	. CRYSTAL UNIT (6944.444 RC) (MIL-C-16B) (T170-D7550-2)	1	
-8	CR-1A/AR	. CRYSTAL UNIT (8000.000 RC) (MIL-C-16B) (T170-D7550-3)	1	
-9	CR-1A/AR	. CRYSTAL UNIT (8100.000 RC) (MIL-C-16B) (T170-D7550-4)	1	
-10	CR-1A/AR	. CRYSTAL UNIT (8458.823 RC) (MIL-C-16B) (T170-D7550-5)	1	
-11	CR-1A/AR	. CRYSTAL UNIT (8727.000 RC) (MIL-C-16B) (T170-D7550-6)	1	
-12	J-68/ARC-3	. JUNCTION BOX, Power, GFP	1	
	J-68A/ARC-3	. JUNCTION BOX, Power, GFP (Alternate)	1	
-13	PL-272	. ADAPTER (T170-D7549)	2	
-14	MX-293/ARM-1	. ADAPTER (T170-D7471)	2	
-15	270	. TOOL, Relay (WE) (T170-D7550-9)	1	
-16	535A	. TOOL, Relay (WE) (T170-D7550-11)	1	
-17	363	. TOOL, Relay (WE) (T170-D7550-10)	1	
-18	MX-506/ARM-1	. CAP (T170-M7548)	2	
-19	U-30/ARM-1	. SHORTING PLUG (T170-D7547)	1	
-20	MX-294/ARM-1	. SHUNTING UNIT (T170-D7465)	1	
-21	265C	. TOOL, Relay (WE) (T170-D7550-12)	1	
-22	MX-173/ARM-1	. TUNING WAND (T170-D7433)	1	
-23	MX-174/ARM-1	. ALIGNMENT TOOL (T170-D7457)	1	
-24	CY-146/ARM-1	. CHEST (T170-D7494) (See figure 6 for breakdown)	1	
-25	311025	. FUSE, 3AG, 25 amp, 25 v (LTF) (spare)	1	
-26	361.500	. FUSE, 8AG, 1/2 amp, 250 v (LTF) (spare)	1	
		(ATTACHING PARTS)		
	T170-D7494-1	. SCREW, Machine No. 8-32 NC-2 x 3/8 in. lg	8	
	T170-D7494-5	. WASHER, Lock split No. 8	8	
	T170-D7494-6	. NUT, Hexagon No. 8-32 NC-2	8	
		---*---		

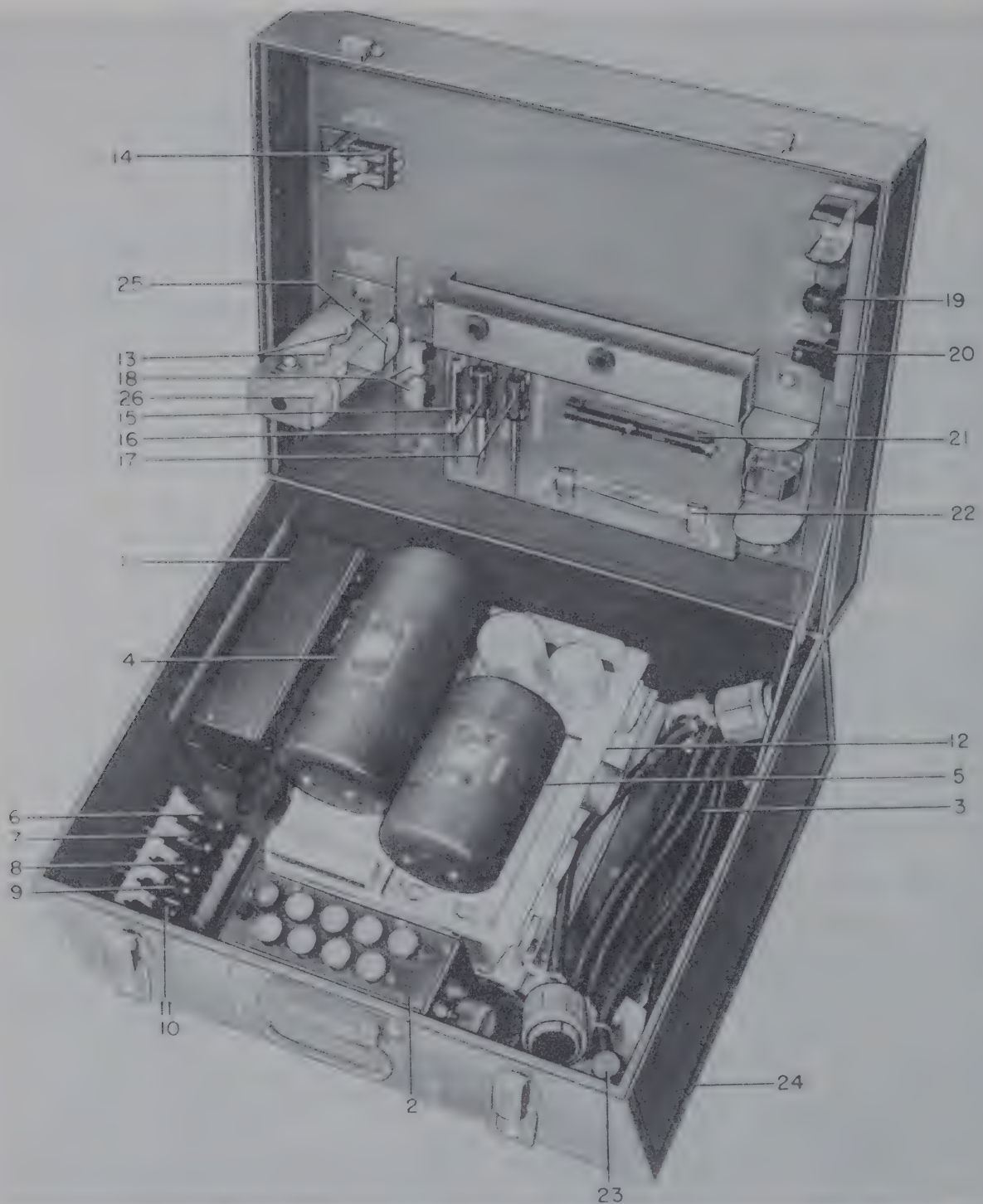


Figure 2. Radio Test Set AN/ARM-1

FIG. & INDEX NO.	PART NO.	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
		1 2 3 4 5 6 7		
		TEST UNIT ASSEMBLY TS-178/ARM-1		
3-	TS-178/ARM-1	TEST UNIT ASSEMBLY (T170-D7454) (See figure 2-1 for next higher assembly)	Ref	
3-	T170-D7449	. PANEL ASSEMBLY.	1	
		(ATTACHING PARTS)		
-1	T170-D7454-2	. SCREW, Machine, No. 4-40 NC-2 x 1/4 in. lg	12	
-2	T170-D7454-4	. WASHER, Lock, split, phosphor bronze, No. 4.	12	
		---*---		
3-	T170-D7447	. . BOARD ASSEMBLY, Terminal	1	
		(ATTACHING PARTS)		
-3	T170-D7449-6	. . SCREW, Machine, No. 4-40 NC-2 x 3/16 in. lg	2	
-4	T170-D7449-8	. . WASHER, Lock, split, phosphor bronze, No. 4	2	
		---*---		
-5	NR-25	. . . RESISTOR, Fixed (COCI) (T170-D7447-2).	1	
-6	NR-50	. . . RESISTOR, Fixed (COCI) (T170-D7447-3).	1	
-7	T170-D7551	. . . BOARD, Terminal	1	
-8	2300A	. . KNOB (DHM) T170-D7449-5.	1	
-9	T170-M7557	. . SWITCH, Rotary	1	
		(ATTACHING PARTS)		
	COMM	. . NUT, Hex, brs, No. 3/8-32 NEF-2A x 3/32 in. thick	1	
	COMM	. . WASHER, Lock, internal tooth, for 3/8 in. shaft	1	
		---*---		
-10	2540-20-00	. . LUG, Solder (SH) (T170-D7449-2)	1	
-11	T170-D7449-1	. . MICROAMMETER	1	
		(ATTACHING PARTS)		
	COMM	. . SCREW, Machine, binding hd, brs, No. 4-40 NC-2 x 3/8 in. lg	3	
	COMM	. . WASHER, Lock, split, phosphor bronze, No. 4	3	
	COMM	. . NUT, Hex, brs, No. 4-40 NC-2	3	
-12	666A (. 172)	. . CLAMP, Cable (SSH) (T170-D7449-4).	1	
		(ATTACHING PARTS)		
	T170-D7454-12	. . SCREW, Machine, No. 6-32 NC-2 x 1/4 in. lg.	1	
	T170-D7454-14	. . WASHER, Lock, split, phosphor bronze, No. 6	1	
	T170-D7454-16	. . NUT, Hex, brs, No. 6-32 NC-2	1	
		---*---		
3-	T170-D7450	. . CABLE ASSEMBLY	1	
-13	AN/PL-152	. . . CONNECTOR, Plug.	1	
-14	T170-M7410	. . . CLAMP	1	
		(ATTACHING PARTS)		
	T170-D7450-16	. . . SCREW, Machine, binding hd, brs, No. 4-40 NC-2 x 3/16 in. lg	2	
	T170-D7450-17	. . . WASHER, Lock, split, phosphor bronze, No. 4	2	
	T170-D7450-18	. . . NUT, Hex, brs, No. 4-40 NC-2	2	
		---*---		
-15	T170-D7444	. . PANEL ASSEMBLY, Riveted	1	
-16	BH-2082	. . FEET, Bump (MIPR) (T170-D7454-1).	3	
		(ATTACHING PARTS)		
	T170-D7454-11	. . SCREW, Machine, No. 4-40 NC-2 x 7/16 in. lg	3	
	T170-D7454-13	. . WASHER, Lock, split, phosphor bronze, No. 4	3	
	T170-D7454-15	. . NUT, Hex, brs, No. 4-40 NC-2	3	
		---*---		
-17	T170-M7439	. . CASE	1	

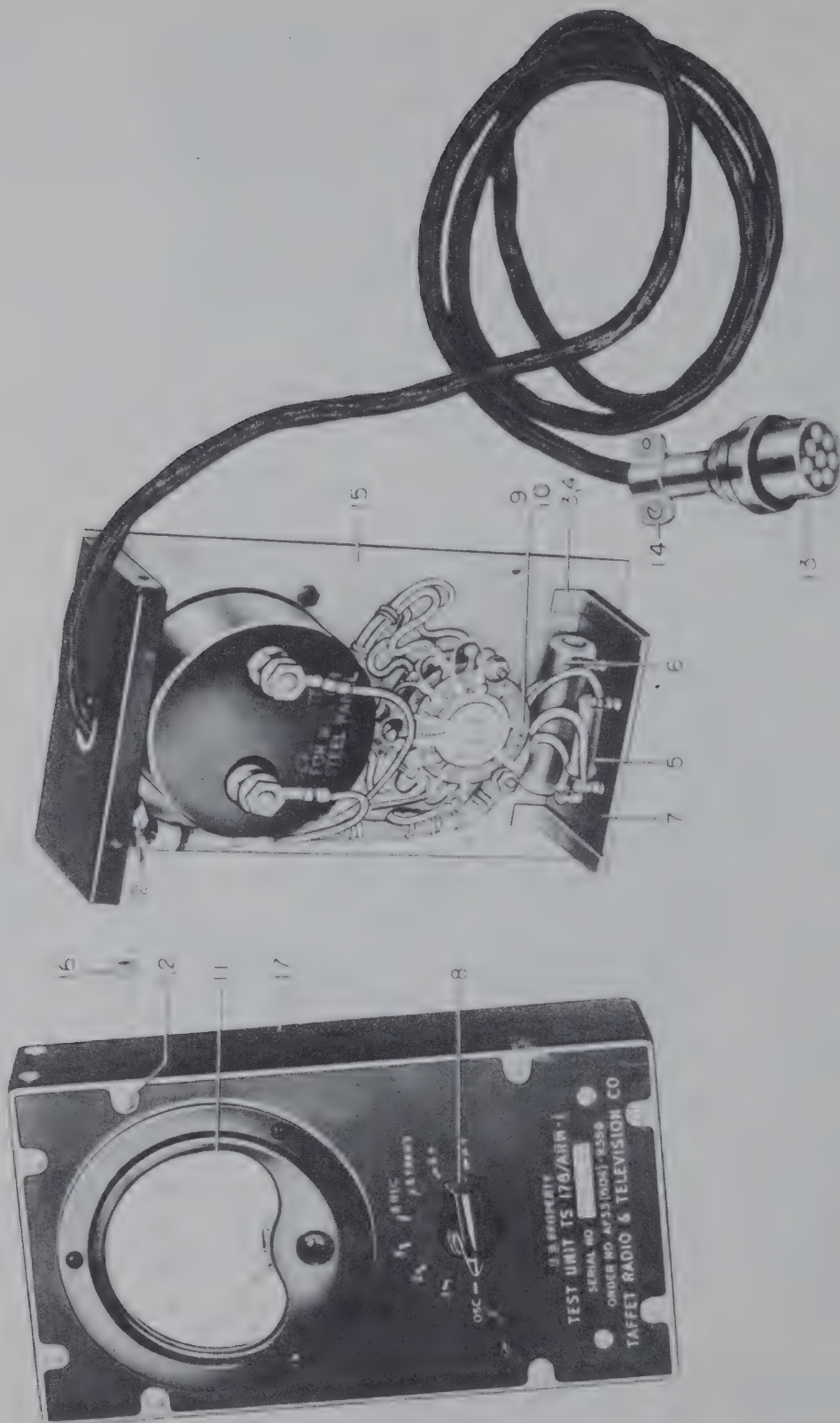


Figure 3. Test Unit Assembly TS-178/ARM-1

FIG. & INDEX NO.	PART NO.	DESCRIPTION						UNITS PER ASSY	USABLE ON CODE
		1	2	3	4	5	6		
		CONTROL BOX ASSEMBLY C-118/ARC-3							
4-	C-118/ARC-3	BOX ASSEMBLY, CONTROL T170-D7431 (See figure 2-2 for next higher assembly)						Ref	
-1	T170-D7424	. PLATE ASSEMBLY, RH side						1	
		(ATTACHING PARTS)							
	T170-D7431-9	. SCREW, Machine, No. 4-40 NC-2 x 3/8 in. lg						8	
	T170-D7431-13	. WASHER, Lock, split, phosphor bronze, No. 4						8	
		----*							
-2	T170-D7418	. PLATE ASSEMBLY, LH side						1	
		(ATTACHING PARTS)							
	T170-D7431-9	. SCREW, Machine, No. 4-40 NC-2 x 3/8 in. lg						8	
	T170-D7431-13	. WASHER, Lock, split, phosphor bronze, No. 4						8	
		----*							
-3	TA713-D4	. CLAMP, Cable (THAS) (T170-D7431-6)						2	
		(ATTACHING PARTS)							
	T170-D7431-12	. SCREW, Machine, No. 8-32 NC-2 x 1/4 in. lg						2	
	T170-D7431-15	. WASHER, Lock, split, phosphor bronze, No. 8						2	
		----*----							

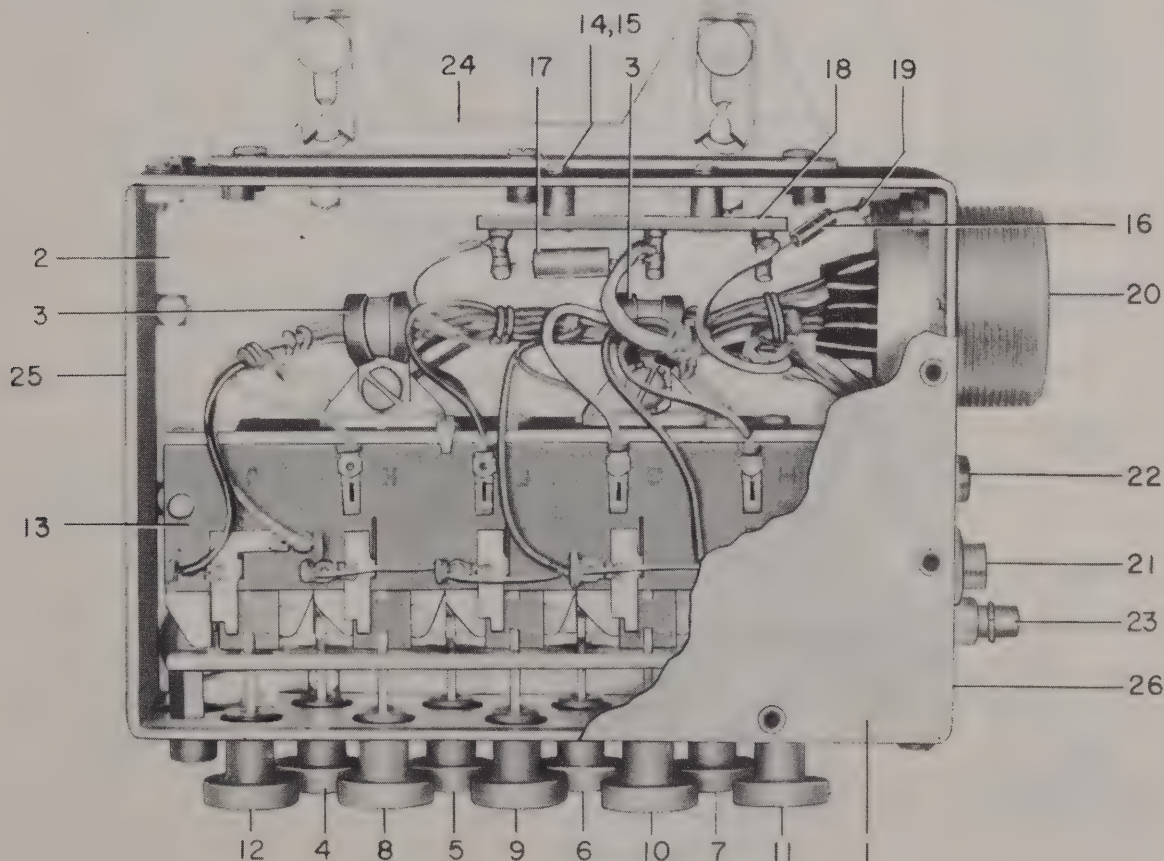


Figure 4. Control Box Assembly C-118/ARC-3

Section II
Group Assembly Parts List

T. O. 33A1-3-3-14

FIG. & INDEX NO.	PART NO.	DESCRIPTION						UNITS PER ASSY	USABLE ON CODE
		1	2	3	4	5	6		
		CONTROL BOX ASSEMBLY C-118/ARC-3 (cont)							
4-4	T170-M7407-1	.	BUTTON, Push A.	.	.	.	.	1	
-5	T170-M7407-2	.	BUTTON, Push B.	.	.	.	.	1	
-6	T170-M7407-3	.	BUTTON, Push C.	.	.	.	.	1	
-7	T170-M7407-4	.	BUTTON, Push D.	.	.	.	.	1	
-8	T170-M7407-5	.	BUTTON, Push E.	.	.	.	.	1	
-9	T170-M7407-6	.	BUTTON, Push F.	.	.	.	.	1	
-10	T170-M7407-7	.	BUTTON, Push G.	.	.	.	.	1	
-11	T170-M7407-8	.	BUTTON, Push H.	.	.	.	.	1	
-12	T170-M7407-9	.	BUTTON, Push OFF	.	.	.	.	1	
		(ATTACHING PARTS)							
	T170-D7431-18	.	SCREW, Set, steel, No. 6-32 NC-2 x 3/16 in. lg	.	.	.	.	9	
-13	6350	.	SWITCH, Push (OAK) (T170-D7431-5)	.	.	.	.	1	
		(ATTACHING PARTS)							
	T170-D7431-10	.	SCREW, Machine, No. 6-32 NC-2 x 5/16 in. lg.	.	.	.	.	4	
	T170-D7431-14	.	WASHER, Lock, split, phosphor bronze, No. 6	.	.	.	.	4	
4-	T170-D7412	.	BOARD ASSEMBLY, Terminal.	.	.	.	.	1	
		(ATTACHING PARTS)							
-14	T170-D7431-8	.	SCREW, Machine, No. 4-40 NC-2 x 1/4 in. lg	.	.	.	.	2	
-15	T170-D7431-13	.	WASHER, Lock, split, phosphor bronze, No. 4.	.	.	.	.	2	
-16	RC20GF271J	.	RESISTOR, Fixed (MIL-R-11).	.	.	.	.	1	
-17	RC32GF102J	.	RESISTOR, Fixed (MIL-R-11).	.	.	.	.	1	
-18	T170-D7427	.	BOARD, Terminal	.	.	.	.	1	
-19	900	.	LUG, Solder (SSH) (T170-D7412-3)	.	.	.	.	1	
-20	AN3102-24-28P	.	CONNECTOR, Receptacle	.	.	.	.	1	
		(ATTACHING PARTS)							
	T170-D7431-10	.	SCREW, Machine, No. 6-32 NC-2 x 3/8 in. lg	.	.	.	.	4	
	T170-D7431-14	.	WASHER, Lock, split, phosphor bronze, No. 6.	.	.	.	.	4	
	T170-D7431-16	.	NUT, Hex, brs, No. 6-32 NC-2	.	.	.	.	4	
-21	2J-1219	.	JACK, Telephone (SWIN) (T170-D7431-2)	.	.	.	.	1	
		(ATTACHING PARTS)							
	COMM	.	NUT, Hex, brs, No. 3/8-32 NEF-2A x 3/32 in. thick	.	.	.	.	1	
	COMM	.	WASHER, Flat, brs, 11/16 OD x 3/8 ID x 0.020 in. thick	.	.	.	.	1	
-22	JK-34A	.	JACK, Telephone (JAN-J-641)	.	.	.	.	1	
		(ATTACHING PARTS)							
	COMM	.	NUT, Hex, brs, No. 3/8-32 NEF-2A x 3/32 in. thick.	.	.	.	.	1	
	COMM	.	WASHER, Flat, brs, 11/16 OD x 3/8 ID x 0.020 in. thick	.	.	.	.	1	
-23	CT	.	SWITCH, Push (STL) (T170-D7431-4)	.	.	.	.	1	
		(ATTACHING PARTS)							
	COMM	.	NUT, Hex, brs, No. 3/8-32 NEF-2A x 3/32 in. thick.	.	.	.	.	1	
-24	T170-D7409	.	BRACKET ASSEMBLY, Mounting	.	.	.	.	1	
		(ATTACHING PARTS)							
	COMM	.	SCREW, Machine, binding hd, brs No. 6-32 NC-2 x 3/8 in. lg	.	.	.	.	3	
	COMM	.	WASHER, Lock, split, phosphor bronze, No. 6.	.	.	.	.	3	
-25	T170-D7421	.	BRACKET ASSEMBLY, Top	.	.	.	.	1	
-26	T170-D7422	.	BRACKET ASSEMBLY, Bottom	.	.	.	.	1	
		(ATTACHING PARTS)							
	T170-D7431-10	.	SCREW, Machine, No. 6-32 NC-2 x 5/16 in. lg.	.	.	.	.	4	
	T170-D7431-14	.	WASHER, Lock, split, phosphor bronze, No. 6.	.	.	.	.	4	

FIG. & INDEX NO.	PART NO.	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE
		CORD ASSEMBLIES		
5-	T170-D7413	CORD ASSEMBLY, CX-214/ARM-1 (See figure 2-3 for next higher assembly)	Ref	
-1	U-16/U	. PLUG (T170-D7413-1)	2	
-2	T170-N7545-1	. TAG, Identification	1	
-3	T170-D7434	. CABLE ASSEMBLY.	1	
5-	CX-215/ARM-1	CORD ASSEMBLY (T170-D7448) (See figure 2-3 for next higher assembly)	Ref	
-4	PL-153-A	. PLUG (T170-D7448-1)	2	
-5	T170-N7545-2	. TAG, Identification	1	
-6	T170-D7540	. CABLE ASSEMBLY.	1	
5-	CX-216A/ARM-1	CORD ASSEMBLY (T170-D7541) (See figure 2-3 for next higher assembly)	Ref	
-7	U-15/U	. PLUG (T170-D7541-1)	1	
-8	PL-151-A	. PLUG (T170-D7541-2)	2	
-9	T170-N7545-3	. TAG, Identification	1	
-10	T170-D7542	. CABLE ASSEMBLY.	1	
5-	CX-217/ARM-1	CORD ASSEMBLY (T170-D7543) (See figure 2-3 for next higher assembly)	Ref	
-11	311025	. FUSE, Cartridge (LTF) (T170-D7543-3)	1	
-12	155020	. FUSEHOLDER (LTF) (T170-D7543-2)	1	
-13	PL-148-A	. PLUG (T170-D7543-1)	1	
-14	T170-N7545-4	. TAG, Identification	1	
-15	T170-N7546	. TAG, Identification	1	
-16	T170-D7544	. CABLE ASSEMBLY.	1	

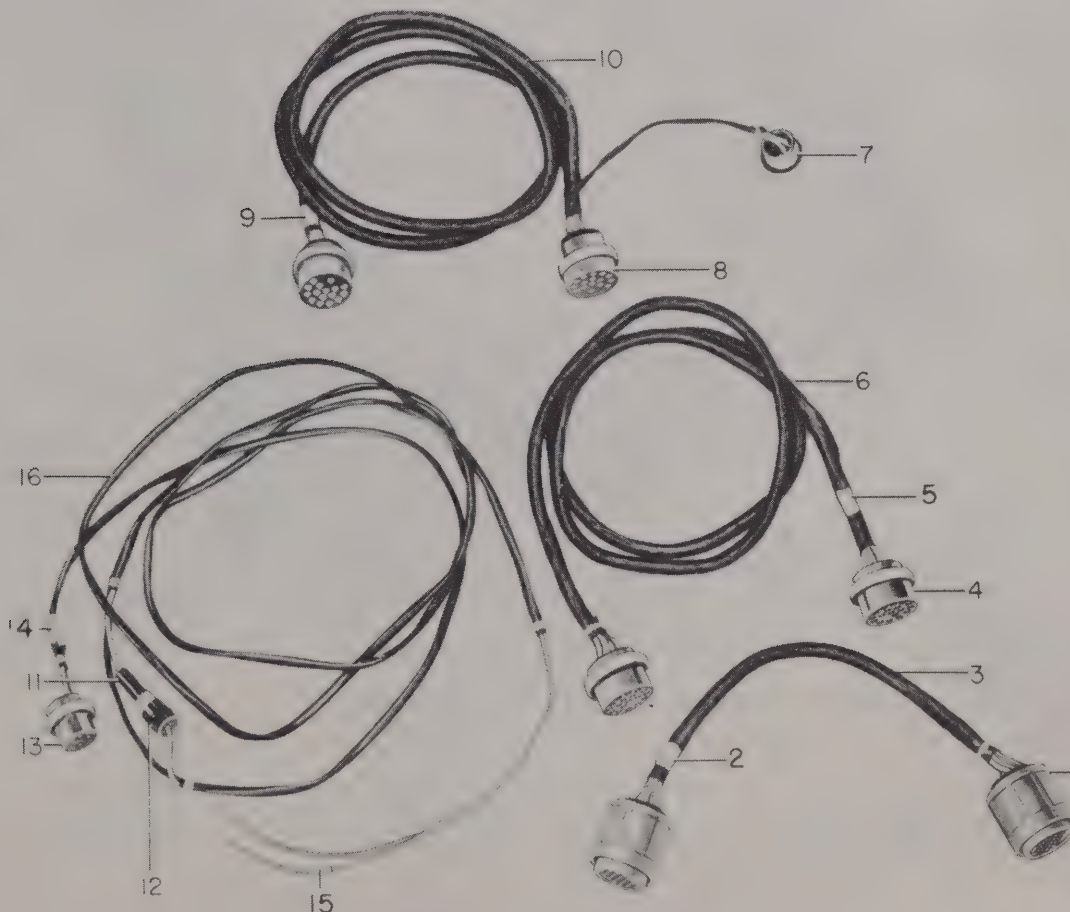


Figure 5. Cord Assemblies

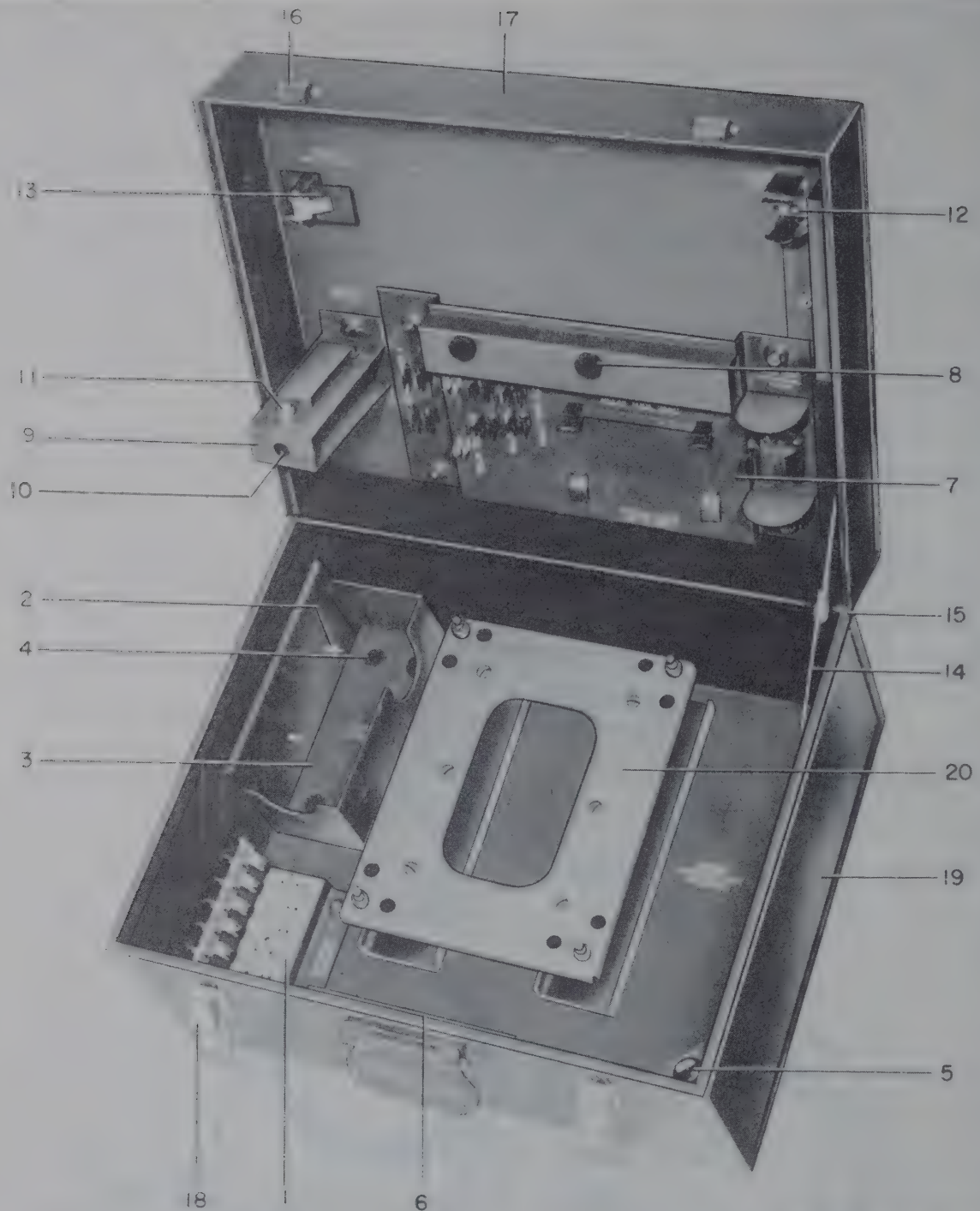


Figure 6. Chest, CY-146/ARM-1

FIG. & INDEX NO.	PART NO.	DESCRIPTION						UNITS PER ASSY	USABLE ON CODE
		1	2	3	4	5	6		
		CHEST, CY-146/ARM-1							
6-	CY-146/ARM-1	CHEST, T170-D7494 (See figure 2-24 for next						Ref	
-1	T170-D7509	. HOLDER ASSEMBLY, Crystal						1	
		(ATTACHING PARTS)							
	T170-D7492-1	. SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg						2	
	T170-D7492-8	. WASHER, Lock, split, phosphor bronze, No. 8						2	
	T170-D7492-6	. NUT, Hex, brs, No. 8-32 NC-2 x 5/16 in. wd						2	
		across flats							
		---*---							
6-	T170-D7518	. HOLDER, ASSEMBLY, TEST UNIT TS-178/ARM-1 . .						1	
		(ATTACHING PARTS)							
-2	T170-D7492-1	. SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg						2	
	T170-D7492-8	. WASHER, Lock, split, phosphor bronze, No. 8						2	
	T170-D7492-6	. NUT, Hex, brs, No. 8-32 NC-2 x 5/16 in. wide.						2	
		across flats							
		---*---							
-3	T170-D7515	. BRACKET ASSEMBLY, Welded						1	
-4	AN931-3-9	. GROMMET (T170-D7517-1)						8	
-5	T170-D7514	. HOLDER ASSEMBLY, Tool						1	
		(ATTACHING PARTS)							
	T170-D7492-1	. SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg						2	
	T170-D7492-8	. WASHER, Lock, split, phosphor bronze, No. 8						2	
		---*---							
-6	No Number	. MOUNTING (Sig C Dwg SC-D-10798), FT-240A						1	
		(control box)							
		(ATTACHING PARTS)							
	T170-D7492-1	. SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg						4	
	96M82	. NUT, Lock (EN)(T170-D7492-5)						4	
		---*---							
-7	T170-D7538	. HOLDER ASSEMBLY, Tool						1	
		(ATTACHING PARTS)							
	T170-D7493-2	. SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg						4	
	T170-D7493-5	. WASHER, Lock, split, phosphor bronze, No. 8						4	
	T170-D7493-6	. NUT, Hex, brs, No. 8-32 NC-2						4	
		---*---							
-8	Y4302	. GROMMET (MRQ) (T170-D7538-7)						2	
-9	T170-D7524	. HOLDER, Adapter, PL-272						1	
		(ATTACHING PARTS)							
	T170-D7493-2	. SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg						2	
	T170-D7493-5	. WASHER, Lock, split, phosphor bronze, No. 8						2	
	T170-D7493-6	. NUT, Hex, brs, No. 8-32 NC-2						2	
		---*---							
-10	Y4302	. GROMMET (MRQ) (T170-D7524-6)						1	
-11	T170-D7524-4	. NUT, Hexagon, brs, No. 8-32 NC-2						2	
	T170-D7524-3	. WASHER, Lock, split, phosphor bronze, No. 8						1	
	T170-D7524-5	. WASHER, Flat, brs, 0.147 in. ID x 5/16 in. OD x . .						1	
		0.025 in. thick							
	T170-D7524-2	. SCREW, Machine, rd hd, brs, No. 8-32 NC-2						1	
	T170-M7525	. NUT, Thumb						1	
-12	T170-D7531	. HOLDER, Phantom Antenna TS-78/U, Shorting Plug . .						1	
		U-30/ARM-1, Shunting Unit MX-294/ARM-1							

Section II
Group Assembly Parts List

T.O. 33A1-3-3-14

FIG. & INDEX NO.	PART NO.	DESCRIPTION						UNITS PER ASSY	USABLE ON CODE
		1	2	3	4	5	6		
		CHEST, CY-146/ARM-1 (cont)							
		(ATTACHING PARTS)							
6-	T170-D7493-2	.	SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg					2	
	T170-D7493-5	.	WASHER, Lock, split, phosphor bronze, No. 8					2	
	T170-D7493-6	.	NUT, Hex, brs, No. 8-32 NC-2					2	
		---*---							
-13	T170-D7406	.	HOLDER, Adapter MX-293/ARM-1					1	
		(ATTACHING PARTS)							
	T170-D7493-2	.	SCREW, Machine, No. 8-32 NC-2 x 3/8 in. lg					1	
	T170-D7493-5	.	WASHER, Lock, split, phosphor bronze, No. 8					1	
	T170-D7493-6	.	NUT, Hex, brs, No. 8-32 NC-2					1	
		---*---							
-14	T170-D7491	.	ARM ASSEMBLY					1	
		(ATTACHING PARTS)							
	T170-D7492-3	.	SCREW, Machine, No. 8-32 NC-2 x 7/8 in. lg (box) . .					1	
	T170-M7414-1	.	SPACER, Box					1	
	T170-D7493-3	.	SCREW, Machine, No. 8-32 NC-2 x 3/4 in. lg (cover) .					1	
	T170-M7414-2	.	SPACER, Cover.					1	
	T170-D7493-5	.	WASHER, Lock, split, phosphor bronze, No. 8					2	
	96M82	.	NUT, Lock (EN) (T170-D7494-1)					2	
		---*---							
6-	No Number	.	CHEST (incl Catch & Strike-plate)					1	
6-	T170-D7493	.	COVER ASSEMBLY (incl strike.plate)					1	
		(ATTACHING PARTS)							
-15	T170-M7500	.	PIN, Hinge					1	
		---*---							
-16	T170-M7499	.	PLATE, Strike p/o Nielsen Catch part No.					2	
		HC-205CE (Mod)							
		(ATTACHING PARTS)							
	T170-D7493-4	.	SCREW, Machine, No. 8-32 NC-2 x 7/16 in. lg. .					4	
	T170-D7493-5	.	WASHER, Lock, split, phosphor bronze, No. 8. .					4	
	T170-D7493-6	.	NUT, Hex, brs, No. 8-32 NC-2					4	
		---*---							
-17	T170-N7502	.	COVER, Screening					1	
	T170-D7492	.	COVER ASSEMBLY, Welded					1	
6-	T170-D7492	.	BOX ASSEMBLY.					1	
-18	T170-M7499	.	CATCH, p/o Nielsen part No. HC-205CE (Mod). .					2	
		(ATTACHING PARTS)							
	T170-D7492-4	.	SCREW, Machine, No. 10-32 NF-2 x 7/16 in. lg .					4	
	T170-D7492-2	.	WASHER, Lock, split, phosphor bronze, No. 10 .					4	
	T170-D7492-7	.	NUT, Hex, brs, No. 10-32 NF-2					4	
		---*---							
-19	T170-N7501	.	BOX, Screening					1	
-20	MT-263B/ARC-3	.	MOUNTING BASE, GFP.					1	

SECTION III
NUMERICAL INDEX

AF CLASS CODE OR STOCK NO.	PART NO.	AF SOURCE CODE	FIG. AND INDEX NO.	QTY PER ARTICLE	MICRO- FILM INDEX
7CAC-8013192542	CHEST		6-	1	
	MOUNTING		6-6	1	
	NUT		3-9	4	
			4-21		
			4-22		
			4-23		
	NUT		3-11	3	
	SCREW		4-24	3	
	SCREW		3-11	3	
	WASHER		3-9	1	
1600-211939981	WASHER		4-21	2	
			4-22		
	WASHER		3-11	3	
	WASHER		4-24	3	
	AN/ARM-1		2-	1	
	AN/PL-152		3-13	1	
	AN3102-24-28P		4-20	1	
	AN931-3-9		6-4	8	
	BH-2082		3-16	3	
	C-118/ARC-3		2-2	1	
7CAC-1702701392			4-	Ref	
	CR-1A/AR(5555.555KC)		2-6	1	
	CR-1A/AR(6944.444KC)		2-7	1	
	CR-1A/AR(8000.000KC)		2-8	1	
	CR-1A/AR(8100.000KC)		2-9	1	
	CR-1A/AR(8458.823KC)		2-10	1	
	CR-1A/AR(8727.000KC)		2-11	1	
	CT		4-23	1	
	CX-214/ARM-1		2-3	1	
			5-	Ref	
7CAC-1702701369	CX-215/ARM-1		2-3	1	
7CAC-1702701372			5-	Ref	
	CX-216A/ARM-1		2-3	1	
			5-	Ref	
	CX-217/ARM-1		2-3	1	
			5-	Ref	
1600-337837500 1600-337837590 1600-347-541000	CY-146/ARM-1		2-24	1	
			6-	Ref	
	DY-21/ARC-3		2-4	1	
	DY-22/ARC-3		2-5	1	
	J-68/ARC-3		2-12	1	
7CAC-857300 8043-56077	J-68A/ARC-3		2-12	1	
	JK-34A		4-22	1	
	MT-263B/ARC-3		6-20	1	
	MX-173/ARM-1		2-22	1	
	MX-174/ARM-1		2-23	1	
3300-328624153	MX-293/ARM-1		2-14	1	
	MX-294/ARM-1		2-20	1	
	MX-506/ARM-1		2-18	2	
	NR-25		3-5	1	

AF CLASS CODE OR STOCK NO.	PART NO.	AF SOURCE CODE	FIG. AND INDEX NO.	QTY PER ARTICLE	MICRO- FILM INDEX
8850-106506	NR-50		3-6	1	
	PL-148-A		5-13	1	
	PL-151-A		5-7	1	
	PL-153-A		5-4	1	
	PL-272		2-13	2	
	RC2-GF271J		4-16	1	
	RC32GF102J		4-17	1	
	TA713-D4		4-3	2	
	TS-178/ARM-1		2-1	1	
			3-	Ref	
	T170-D7406		6-13	1	
	T170-D7409		4-24	1	
	T170-D7412		4-	1	
	T170-D7413		5-	Ref	
	T170-D7418		4-2	1	
	T170-D7421		4-25	1	
	T170-D7422		4-26	1	
	T170-D7424		4-1	1	
	T170-D7427		4-18	1	
	T170-D7431-8		4-14	2	
	T170-D7431-9		4-1	16	
			4-2		
	T170-D7431-10		4-13	12	
			4-20		
			4-26		
	T170-D7431-12		4-3	2	
	T170-D7431-13		4-1	18	
			4-2		
			4-15		
	T170-D7431-14		4-13	12	
			4-20		
			4-26		
	T170-D7431-15		4-3	2	
	T170-D7431-16		4-20	4	
	T170-D7431-18		4-12	9	
	T170-D7434		5-3	1	
	T170-D7444		3-15	1	
	T170-D7447		3-	1	
	T170-D7449		3-	1	
	T170-D7449-1		3-11	1	
	T170-D7449-6		3-3	2	
	T170-D7449-8		3-4	2	
	T170-D7450		3-	1	
	T170-D7450-16		3-14	2	
	T170-D7450-17		3-14	2	
	T170-D7450-18		3-14	2	
	T170-D7454-2		3-1	12	
	T170-D7454-4		3-2	12	
	T170-D7454-11		3-16	3	
	T170-D7454-12		3-12	1	
	T170-D7454-13		3-16	3	
	T170-D7454-14		3-12	1	
	T170-D7454-15		3-16	3	
	T170-D7454-16		3-12	1	
	T170-D7491		6-14	1	
	T170-D7492		6-	1	
	T170-D7492-1		6-1	10	
			6-2		
			6-5		
			6-6		

AF CLASS CODE OR STOCK NO.	PART NO.	AF SOURCE CODE	FIG. AND INDEX NO.	QTY PER ARTICLE	MICRO- FILM INDEX
	T170-D7492-2		6-18	4	
	T170-D7492-3		6-14	1	
	T170-D7492-4		6-18	4	
	T170-D7492-6		6-1	4	
			6-2		
	T170-D7492-7		6-18	4	
	T170-D7492-8		6-1	6	
			6-2		
			6-5		
	T170-D7493		6-	1	
	T170-D7493-2		6-7	9	
			6-9		
			6-12		
			6-13		
	T170-D7493-3		6-14	5	
			6-15		
	T170-D7493-4		6-16	4	
	T170-D7493-5		6-7	15	
			6-9		
			6-12		
			6-13		
			6-14		
			6-16		
	T170-D7493-6		6-7	13	
			6-9		
			6-12		
			6-13		
			6-16		
	T170-D7509		6-1	1	
	T170-D7514		6-5	1	
	T170-D7515		6-3	1	
	T170-D7518		6-	1	
	T170-D7524		6-9	1	
	T170-D7524-2		6-11	1	
	T170-D7524-3		6-11	1	
	T170-D7524-4		6-11	2	
	T170-D7524-5		6-11	1	
	T170-D7531		6-12	1	
	T170-D7538		6-7	1	
	T170-D7540		5-6	1	
	T170-D7542		5-10	1	
	T170-D7544		5-16	1	
	T170-D7551		3-7	1	
	T170-M-7407-1		4-4	1	
	T170-M7407		4-5	1	
	T170-M7407-3		4-6	1	
	T170-M7407-4		4-7	1	
	T170-M7407-5		4-8	1	
	TM170-M7407-6		4-9	1	
	TM170-M7407-7		4-10	1	
	TM170-M7407-8		4-11	1	
	TM170-M7407-9		4-12	1	
	T170-M7410		3-14	1	
	T170-M7414-1		6-14	1	
	T170-M7414-2		6-14	1	
	T170-M7439		3-17	1	
	T170-M7499		6-16	4	
			6-18		
	T170-M7500		6-15	1	
	T170-M7525		6-10	1	

AF CLASS CODE OR STOCK NO.	PART NO.	AF SOURCE CODE	FIG. AND INDEX NO.	QTY PER ARTICLE	MICRO- FILM INDEX
88550-466700	T170-M7557		3-9	1	
	T170-N7501		6-19	1	
	T170-N7502		6-17	1	
	T170-N7545-1		5-2	1	
	T170-N7545-2		5-5	1	
	T170-N7543-3		5-9	1	
	T170-N7545-4		5-14	1	
	T170-N7546		5-15	1	
	U-15/U		5-7	2	
	U-16/U		5-1	2	
	U-30/ARM-1		2-19	1	
	Y4302		6-8	3	
			6-10		
8800-357800	155020		5-12	1	
	2J-1219		4-21	1	
	2300A		3-8	1	
	2540-20-00		3-10	1	
	265C		2-21	1	
	270		2-15	1	
	311025		2-25	1	
	361.500		2-26	1	
	363		2-17	1	
	535A		2-16	1	
	6350		4-13	1	
	666AC. 172)		3-12	1	
	900		4-19	1	
	96M82		6-6	6	
			6-14		

SECTION IV
REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	FIGURE INDEX	CLASS CODE OR STOCK NO.	PART NO.	REFERENCE DESIGNATION	FIGURE INDEX	CLASS CODE OR STOCK NO.	PART NO.
E501	4-4		T170-M7401-1	H706	2-16		535A
E502	4-5		T170-M7407-2	H707	2-18		MX-506/ARM-1
E503	4-6		T170-M7407-3	J501	4-21		2J-1219
E504	4-7		T170-M7407-4	J502	4-22		JK-34A
E505	4-8		T170-M7407-5	J701	3-13		AN/PL-152
E506	4-9		T170-M7407-6	P501	4-20		AN3102-24- 28P
E507	4-10		T170-M7407-7	R701	3-5		NR-25
E508	4-11		T170-M7407-8	R702	3-6		NR-50
E509	4-12		T170-M7407-9	S701	3-9		T170-M7557
E701	3-		T170-D7447	S702	3-8		2300A
E703	2-13	885D-106506	PL-272	W701	5-		T170-D7413
E705	2-19	8850-466700	U-30/ARM-1	W702	5-	7CAC- 1702701369	CX-215/ARM-1
H701	2-23	8043-56077	MX-174/ ARM-1	W703	5-		CX-216A/ ARM-1
H703	2-21		265C				
H705	2-17		363				

